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Vol. 89 July 12, 1930 No. 2

In this Issue

Safety Section to Set New Goal ..... Page 50

Representatives of managements and employees, meeting at Denver, recommend the establishment of a new and more advanced goal for reduction of accidents.

Rock Island Gets Fifty Modern Caboose Cars 59

New caboose cars, now under construction in this company's shops, are finished in aluminum-painted steel, and embody the latest features of design.

How Illinois Central Increased Average Car Load 63

G. E. Patterson, vice-president, describes the methods employed by this system in a ten-year campaign for heavier loading, which resulted in a saving of over $4,000,000 in 1929.

EDITORIALS

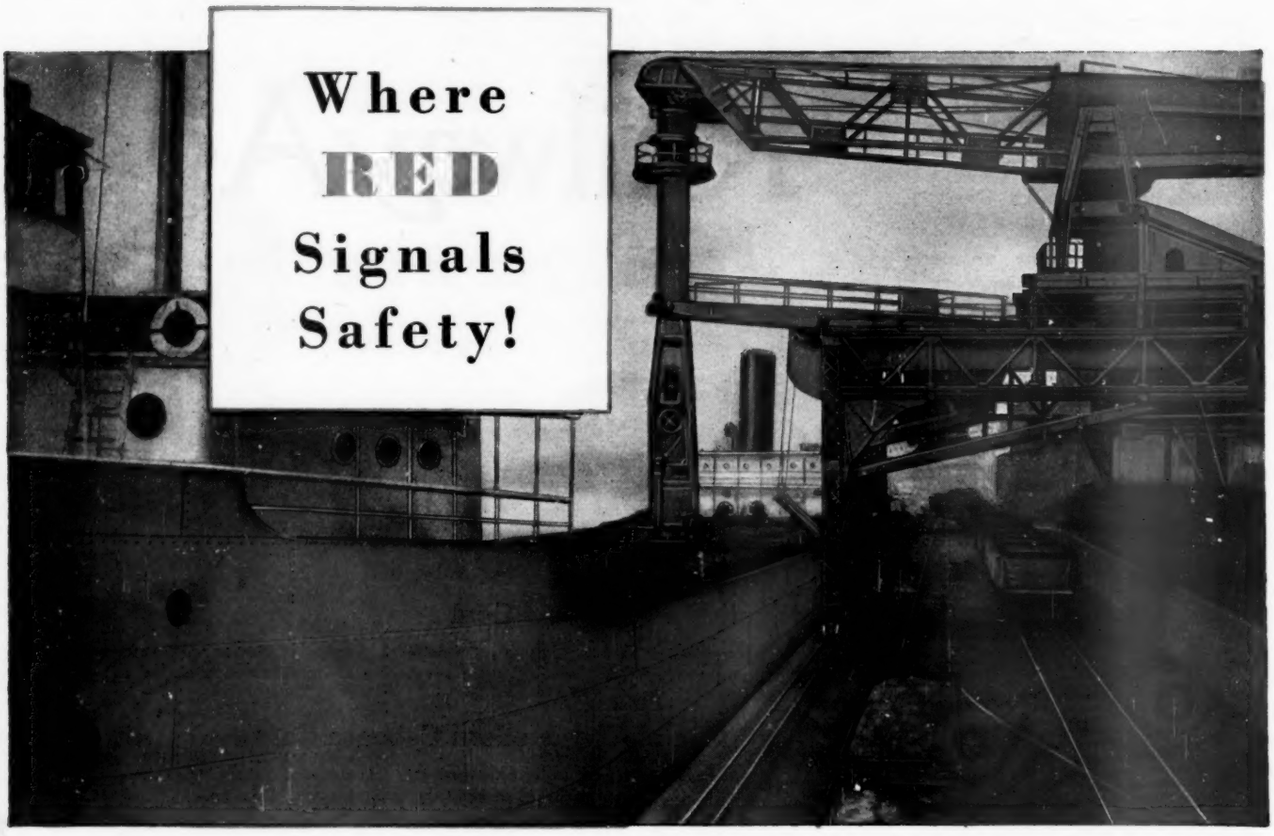
Can Business Be Stabilized? 47
The Investment Trusts and Holding Companies 48
Problems in Standardizing 49
The I. C. C. and Rail-Highway Co-ordination 49

GENERAL ARTICLES

Safety Section to Set New Goal 50
The Railroad Control Inquiry 56
Rock Island Gets Fifty Modern Caboose Cars 59
Freight Car Loading 60
Daylighting a 1400-Ft. Tunnel 61
Light-Weight Concrete Car Floor Tested 62
How Illinois Central Increased Average Car Load, by G. E. Patterson 63
Freight Station Section Meets at Louisville 65
Missouri-Kansas-Texas Tests Efficiency of Whistle, by J. L. Walsh 67
Eastern and Western Class Rates Revised 69
Fourth Section Relief Proposed for S. P. Lines 73
Motor Coach Bill Held Over 75
President Approves Rivers and Harbors Bill 75
Shippers Estimate Carloadings 76

LOOKING BACKWARD 76
NEW BOOKS 77
ODDS AND ENDS OF RAILROADING 78
NEWS OF THE WEEK 79

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service



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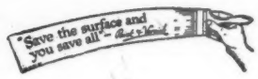

Railway Age

Vol. 89, No. 2 July 12, 1930

Table of Contents Appears on Page 5 of Advertising Section

Can Business Be Stabilized?

WHAT effect has been produced by the movement to maintain business started by business leaders last fall on the initiative of President Hoover? This is an extremely important question, but one difficult to answer. It is important because a correct answer to it would afford valuable information for future use. It is so difficult to answer because the trend of general business is determined by so many and such powerful influences.

It has not had the effects anticipated by the more optimistic. Predictions were made that general business would begin to show improvement in the second quarter of 1930. On the contrary, railway freight car loadings, which are the best single measure, show that, as compared with a year before, business constantly grew relatively worse from October 1, 1929, to July 1, 1930. Has it declined more or less than it would have if special efforts had not been made to maintain it? It is impossible to answer this question. There are, however, some indications that it has declined less.

How Much Has Business Declined?

The decline in general business, as indicated by railway car loadings, began earlier in 1929 than in 1920. It was, however, as plain to all observers that business was declining in the last third of 1920 as it was in the last third of 1929. The decline in car loadings in the first quarter of 1921 was 15 per cent, while in the first quarter of 1930 it was only 7.2 per cent. The decline in the second quarter of 1921 was 11 per cent, and in the second quarter of 1930 also 11 per cent, but the comparative figures for the second quarters of 1920 and 1921 are unsatisfactory because in this part of 1920 loadings were adversely affected by switchmen's strikes. The average decline in the first six months of 1921 was 13 per cent, while in the first six months of 1930 it was 9.2 per cent. In June, 1921, car loadings showed a decline of 15 per cent, while in June, 1930, they showed a decline of 13 per cent.

It will be seen that the decline in the entire first half of 1930 was relatively smaller than in 1921. The difference may have been due in large measure to the efforts that have been made since last fall to maintain business. There are, however, other important differences in conditions and influences that must be considered. The general tendency of the stock market was downward throughout 1920, and consequently there was no such violent collapse of stock market prices as occurred in the fall of 1929. On the other hand, stocks of goods and commodity prices were much more inflated in 1920 than in 1929, and commodity prices declined much more. The huge inventories being carried, and the terrific decline of commodity prices in the latter part of 1920 and the early part of 1921, no doubt were largely responsible for the fact that general business and freight car loadings declined so much more in the early part of 1921 than in the early part of 1930.

The "Committee on Recent Economic Changes of the Presidents' Conference on Unemployment" recently has issued an interesting and timely report on "Planning and Control of Public Works." On public construction about $3,500,000,000 is expended each year and about 900,000 men are directly employed. "This public expenditure on permanent improvements in the United States," says the report, "represents from 35 to 40 per cent of the total volume of expenditures for all private and public construction. * * * Public roads in 1929, the largest single element in public construction, cost more than $1,500,000,000." The committee believes that this large volume of public construction should be so timed as to help maintain business in periods of depression, but adds, "Nor does it appear practicable or necessary on any large scale to withhold expenditure on public construction during years of prosperity in order to accumulate a reserve of work during business depressions."

"Booms" and Business Depressions

There is no economic question of greater importance than the question as to whether business can be stabilized, and, if so, to what extent. During the great bull stock market movement a year ago it was repeatedly claimed that the "business cycle" had been abolished. The apparent belief of those who made this claim was that for some reason or reasons business would never again become bad in this country. The claim has been sufficiently refuted by incontrovertible developments. The purpose of the movement initiated by President Hoover was to stabilize business by arresting the decline which experience indicated would come unless unprecedentedly intelligent and effective efforts were made to prevent it. Nevertheless, business has declined, and railroad car loadings indicate that at midsummer 1930 it is

almost as bad, compared with what it was at midsummer 1929, as it was at midsummer 1921 as compared with midsummer, 1920. In the economic as in the natural world the only way to prevent effects is to attack their causes. The causes of business depression are "booms" of one kind or another. These booms may involve excessive prices of real estate, or excessive prices of commodities, or the accumulation of excessive stocks of goods; but whatever else they involve, they always involve inflation of one or more kinds. A period of inflation is often mistaken for one of great prosperity, as was the case last year. A period of deflation is always one of depression. The fact is, however, that inflation is just as unhealthy as deflation, and that inflation inevitably results in a period of deflation. Consequently, we can never stabilize business, and avoid periods of deflation and depression unless we are going to avoid periods of inflation and unhealthy "prosperity." The one is the effect of the other, and the effect cannot be prevented except by eliminating the cause.

It would appear, therefore, that those who have been trying to maintain business began at the wrong time. The time to have begun was when plain evidences of inflation began to appear, and the thing to have done was to have attempted to halt the inflation. Some efforts for this purpose were made. Some business leaders, as far back as two years ago, began to utter warnings that stock market prices were becoming inflated. The Federal Reserve Board apparently used its influence over interest rates to check the wild speculation. There was, however, no organized effort to arrest inflation, and, in fact, many of the men to whom the nation most confidently looked for leadership in business and finance continued to be "bulls" in their activities and public expressions until the collapse of the stock market began.

Lesson of Recent Experience

The experience of the last year shows that what the nation needs is not merely means of preventing the effects of depressions, but means of preventing their causes. How can the causes be eliminated? Possibly by such organized action by business leaders as has been tried since the collapse of the stock market. But if business is actually to be stabilized it must be influenced when it is good as well as when it is bad. The vast expenditures of government for public improvements might be used as one strong stabilizing influence, but the report of the "Committee on Recent Economic Changes" is not very encouraging when it says, "Nor does it appear practicable or necessary on any large scale to withhold expenditures on public construction during years of prosperity in order to accumulate a reserve of work during business depressions."

Experience indicates that if in years of prosperity general business is to go forward as in the past with extraordinarily large expenditures for improvements, and the governments are going to accumulate in such years only comparatively small reserves of expenditures for poor years, we shall continue as heretofore to have periods of great activity and inflation, followed by periods of deflation and depression. If there is to be any real stabilization it must be accomplished by the total expenditures of business and government being budgeted much more uniformly over periods of years than they have been in the past.

Is stabilization of business practicable? It has never been accomplished in the past. There exists, at the present time, however, an organization of business men that was formed to try to devise means of breaking the force of the present depression. It might be well worth while for it to undertake a study of means that might be adopted in future to eliminate or modify the influences which produce inflation and unhealthy so-called "prosperity," and which are the invariable precursor of depression. If business leaders had met six months or even a year before they did and exposed the inflation that was occurring and tried to stop it, doubtless they would have been denounced for trying to destroy the country's prosperity, but they might have exerted an influence then which would largely have prevented what has occurred during the last nine months. If efforts to stabilize business are to be begun only after inflation has become rampant they might about as well be abandoned altogether.

The Investment Trusts and Holding Companies

A CLEAR distinction should be drawn between the investment trust which acquires railroad stocks solely for investment purposes and another which acquires them to exercise control in such a manner as to effect virtual consolidation of railroads. In the former case there is no reason for any public concern whatever. In the latter, the public may or may not be concerned, depending upon whether or not the consolidation of properties is in the public interest.

The fact that an investment trust acquires a large interest in a railroad or in several railroads, but without utilizing this ownership to the detriment of the properties or the public, should cause no alarm to anyone. Moreover, probably none but political busybodies will see any cause for complaint in such a development. A bona fide investment trust, capably managed and with skilled men to watch the properties in which it is interested and to sit on their directorates, may have a contribution of real value to make to the management and direction of the railroads.

Where the investment trust or holding company is used as a device for extra-legal consolidation of railroads, its operation may give rise to some question—but even here the burden of proof should be upon those who want to regulate. Railroad consolidation, at least to some degree, is generally recognized as desirable. Yet the obstacles put in the way of such development by legislative and administrative interference have been, in many cases, insuperable. May not the device of the holding company, if not abused, often serve legitimately as a preliminary step toward a highly de-

sirable end? Some abuses may arise, but should not legislative or other regulatory interference first make sure that, to correct a minor evil, it does not at the same time give rise to others more serious than that which it is designed to correct?

The limits to which politicians will go, when given a free hand, in circumscribing beyond the reasonable necessity of the public interest the freedom of private enterprise have reached their pinnacle of absurdity in this country. The observations of R. Bell, assistant general manager of the London & North Eastern, published in last week's *Railway Age*, on the extent to which government regulation of railways has gone in this country, gives a startling picture of ourselves in the eyes of a disinterested, though knowing, outsider. The British railwaymen, he concludes, are as "free as air" from troublesome and unwarranted restrictions as compared with their colleagues on this side of the Atlantic. Is the investment trust and holding company going to be the excuse on which to hang still further restrictions on the initiative which still remains in private hands?

Problems in Standardizing

THE standardization of specifications for railway materials for the purpose of reducing the number of varieties of stock which the purchasing agent must buy and the storekeeper must carry is not the simple problem which it often appears to be. It is a task that calls for the exercise of seasoned judgment if the ultimate interests of the road are to be best served in all particulars. Take the case of cotton waste. Railways buy it in large quantities for wiping and for journal box packing. In the interests of simplification, some roads buy waste for both uses. Other roads buy two grades of waste instead of one, and are able to make a substantial saving by reason of a wide difference between the market prices for the two grades.

Again, it is common for railroads to buy a low sulphur and a low viscosity fuel oil for all purposes; yet where the oil is used for heating only, two per cent of sulphur is not objectionable, and in the summer time oil with higher viscosity can be used satisfactorily. Long-time burning oil can be used in the place of headlight oil and distillate, as well as for the primary purpose for which it is bought, but the question arises as to the price that a railroad should be willing to pay for the substitution.

The same problem arises in connection with specifications. Here the universal desire is to standardize; yet standardization may easily embody unwise restrictions on purchasing if not prudently effected. Standardization and simplification are important to the roads and should be furthered at every opportunity. It is equally important, however, that the mechanics of these activities should always be kept in good hands; otherwise their results in many particulars may be penny wise and pound foolish. The urge to standardize and simplify is one thing, while the practice of standardizing and simplifying is another. The economical practice is obviously one of constantly matching the quantity of the work with its quality in any standardization and simplification program, and the supply forces of railroads should be among those to keep this prominently in mind.

The I. C. C. and Rail-Highway Co-ordination

TO the railways which are now engaged in the operation of motor vehicles in connection with their passenger or freight services, and to those which are considering the co-ordination of highway service with their railway operations, the forthcoming investigation by the Interstate Commerce Commission of the highway operations, both passenger and freight, conducted by the railways, is of prime importance. The commission on May 12 entered an order for the investigation. Following the return of questionnaires distributed among the railways, the commission is expected to begin a series of hearings in various parts of the country, beginning probably in the late summer.

One of the objects of the commission's investigation is to secure information to be used as a basis for "making recommendations to Congress respecting such legislation as may be necessary or desirable in the public interest to accomplish further or more efficient co-ordination of motor transportation." Co-ordination of railway and highway service in such manner as to combine the best features of each is the apparent purpose of an increasing number of railways. That Congress sooner or later will enact legislation having an important bearing upon the co-ordination of railway and highway transportation is a foregone conclusion; certain amendments grafted on the Parker bill to regulate interstate motor coach lines during the session of Congress recently closed indicated that quite plainly. The recommendations of the Interstate Commerce Commission relative to the provisions of such legislation should have considerable weight, and it is therefore highly desirable that the commission's recommendations be based upon a most complete knowledge of the existing state of affairs with respect to railway and highway co-ordination.

It seems highly desirable, for this reason, that the railways should be fully represented at the forthcoming hearings, and that they should state their case in detail, both in their replies to the commission's questionnaire and in the oral testimony of their representatives. This investigation of the Interstate Commerce Commission may well exert an important bearing on the course of rail-highway co-ordination in the future. It is of importance to the railways, as well as to the country as a whole, that such co-ordination be carried out along sound economic lines. The closest possible attention to the commission's investigation therefore appears essential.

Safety Section to Set New Goal

Program of annual meeting at Denver included representatives of managements and employees

A RESOLUTION calling upon the incoming administration to establish a new and more advanced goal for the reduction of accidents on railways was passed at the tenth annual meeting of the Safety Section of the American Railway Association which was held at Denver, Colo., on July 1 to 3 and which was attended by over 500 representatives of the railroads. The resolution, which was presented by H. A. Rowe, claims attorney of the Delaware, Lackawanna & Western, does not affect the present goal which calls for a 35 per cent reduction in accidents by the end of 1930, but asks that, since the section has already passed this mark, set in 1924, a new goal be established so that the section will have a mark to work to for the period from January 1, 1931 to December 1, 1933.

Another outstanding feature of the meeting, which was presided over by Chairman L. G. Bentley, general safety agent of the Chesapeake & Ohio, was the participation in the program of representatives of both employers and employees which demonstrated a common understanding of the importance of safety on the part of the management and the employees. W. M. Jeffers, vice-president of operation of the Union Pacific in speaking on "Some Essentials of Safe Operation" and A. F. Whitney, president of the Brotherhood of Railroad Trainmen in outlining "The Trainmen's Viewpoint" expressed a common interest regarding the problem. This mutual attitude toward safety was augmented by Elmer T. Howson, western editor of the *Railway Age,* who offered several suggestions for the future reduction of casualties.

Several other addresses and various committee reports comprised the main portion of the program. In addition, officers for the ensuing year were elected as follows: Chairman, H. A. Rowe; first vice-chairman, C. T. Bailey, chief safety agent of the Oregon Short Line; and second vice-chairman, C. E. Hill, general safety agent of the New York Central.

The place and date of the 1931 meeting were not selected by the convention but the general sentiment was in favor of Washington, D. C., as a suitable place to celebrate the attainment of the goal set in 1924.

Addresses were Significant

The addresses made by Messrs. Jeffers, Whitney and Howson will be published in subsequent issues of the *Railway Age*. In expressing the managements' interest in safety, Mr. Jeffers outlined the functions of the safety department of his road and advocated familiarity and understanding of the details of the safety requirements of all positions on the railroad. He regarded surprise tests as a necessary assurance that rules are being enforced and attributed the success of safety in general to the energetic co-operation of employees.

Mr. Whitney emphasized the continuing need for dramatization and verification of the safety admonition in such a manner as will give it an arresting freshness of appeal to those to whom it is directed. He questioned the appeal to human fears and advocated practical studies of accident prevention. In addition he discussed safety in regard to operating schedules and spoke of the closer and more enlightened contact between the managements and employees.

Mr. Howson forecasted the future development of railroading and offered several suggestions for the further expansion of safety activities. He mentioned motor coach and airplane transportation in addition to new machinery, education of children and crossing protection as fertile possibilities for the safety man.

Others who addressed the meeting included Arthur O. Ridgway, chief engineer of the Denver & Rio Grande Western, W. C. Stephenson, shop superintendent of the Atlantic Coast Line, B. S. Holliman, division superintendent of the Texas & New Orleans and Lew Palmer of the National Safety Council. Mr. Ridgway told of the dominance of the element of safety in all true engineering. Mr. Stephenson outlined the practical application of safety as it applies to the shopmen. In his talk he touched upon the design of shops, and the value of light, guards for machinery, gloves and clothing, goggles and screens, cranes, and supervision.

Mr. Holliman confined his remarks to the safety problem in the maintenance of way department. He told of the co-operation of officers and employees of the Southern Pacific, which has enabled that road to build up an enviable record in the reduction of accidents in the maintenance of way department.

Other Accident Prevention Work

A portion of the afternoon of the second day was devoted to the consideration of other branches of accident prevention work. Certain men were assigned subjects and were given eight minutes in which to express themselves, after which the members were given the opportunity to question the speakers. Robert Scott, director

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of the insurance and safety department of the Atlantic Coast Line, told how he promoted active interest on his road. As a result of his enthusiasm in promoting a campaign, several of the officers of his road volunteered to furnish plaques as prizes in the contest. The executive vice-president awarded a plaque to the winners in the transportation department, the chief engineer to the winners in the engineering department, and the general superintendent to the winners in the mechanical department. He also told how the claim department assisted in reducing injuries by a more stringent settlement of personal injury cases and how as a result of its success it adopted the slogan "It is better to prevent an accident than to make a good settlement."

M. J. Flanigan, manager of the safety department of the Chicago, Milwaukee, St. Paul & Pacific, presented the subject "Investigating Accidents" and described the methods he employs. He said that one chief clerk and four clerks in his office investigate all cases and submit the reports to him. An interview is held with the injured person immediately after the accident or as soon after as the medical officers deem it advisable.

C. T. Bailey, chief safety agent of the Oregon Short Line, in speaking on formulating and enforcing rules, described the methods used on the Union Pacific. He said that when rules are violated the person responsible for the violation is reprimanded. When given a case of three men on a footboard and asked which of the three men—the first one on, the second or third—would be held responsible he said the supervisor for permitting the violation.

F. W. Curtis, supervisor of safety and fire prevention of the Denver & Rio Grande Western, advocated checking up on practices and conditions. Such procedure, he said, raises the morale of the organization, tends to kill infractions of rules and creates healthy rivalry. In addition, it reveals extinct rules and keeps the safety man on his toes.

Highway Crossing Accidents

The Committee on the Prevention of Highway Crossing Accidents, of which H. A. Rowe was chairman, reported a decrease of 83 fatalities or 3.2 per cent in 1929 as compared with 1928. There was an increase in injuries of 139 or 2 per cent and an increase in accidents of 175 or 2.9 per cent. The totals for the year were 2,485 fatalities, 6,804 injuries and 5,975 accidents. The registration of automobiles using the highways increased to the total of 26,501,000.

The suggestion of a member of the Supreme Court of Ohio, asking that tests be made of the effect of a vertical headlight in addition to the horizontal headlight upon locomotives, with the thought that such vertical headlight would tend toward a more easy discernment of the approach of a train in conjested or obstructed areas, was responded to by the New York Central through Charles E. Hill, general safety agent, by an actual test upon its train No. 10 from Toledo, Ohio to Buffalo, N. Y., on April 29, 1930. The climatic and other conditions were ideal for such a test and observations were made by 36 observers located at various points in the vicinity of Cleveland and with a variety of obstructed and clear views. The unanimous consensus of opinion was that such a vertical headlight, though of the same candle power as the horizontal headlight, was wholly impractical and did not add anything to one's ability to observe an approaching train.

Report on Train Accidents

The Committee on Train Accidents, of which F. Hartenstien, assistant to the general manager of the Lehigh Valley, was chairman, reported an increase of 236 train accidents and a total increase in casualties of 465 in 1929 as compared with 1928. In 1929, there were 4,435 collisions as compared with 4,302 in 1928 and as a result of these, 85 people were killed in 1929 and 70 in 1928, while 1,212 were injured in 1929 and 1,192 in 1928. The principal causes for the collisions, he said, were:

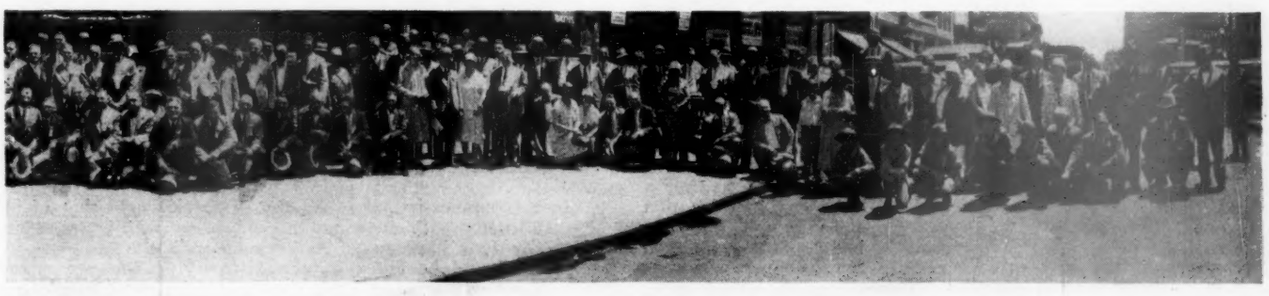
Failure to obey the provisions of Rule 99.
Failure to obey signal indication.
Failure to carry out the provisions of train orders properly.
Failure in the proper delivering of train orders.
Occupying the main line on the time of overdue superior trains without protection.
Violation of speed restrictions in yards and terminals.
Open switches.
Operating against the current of traffic without proper protection.
Failure to make proper air brake tests.
Failure to check train registers, etc.

In each of the 82 collisions investigated by the representatives of the Interstate Commerce Commission, in company with members of state utilities and public service commissions and railroad officers, the responsibility for them was placed upon railroad employees.

Employees that are entrusted with the operation of train and yard service, the report continued, are examined on the rules and we assume that the examinations are satisfactory and that their understanding of the rules are known to be clear before they are assigned to service. It is the observation of your committee that employees in train and yard service will be obedient to the rules and instructions if officers and supervisory forces are insistent upon their enforcement, but any laxity on the part of supervisory forces will naturally be reflected in the kind of service rendered by employees.

During the last four or five years, the railroads of this country have established a number of new records for operating efficiency and economy, and if the same sincere interest and effort is applied to the prevention of collisions by supervisory forces and employees the results, unquestionably, will be gratifying.

Your committee is of the opinion that the railroads in this country have sufficient rules, if enforced, to eliminate collisions entirely, but definite action must first be taken by officers and supervisors who have been given authority and can be depended upon to impose discipline for any infraction of the rules and instructions that is liable to cause a collision. Every officer and every supervisor who is given authority



tion Group at Denver

to promulgate rules or issue instructions accepts the responsibility of having them properly executed.

Other Reports

Other reports included that of the Education committee, presented by E. R. Cott, supervisor of safety of the Chesapeake & Ohio; that of the Committee on Train Service Accidents, presented by C. T. Bailey, chief safety agent of the Oregon Short Line; that of the Committee on Interstate Commerce Commission Rule Interpretations, presented by Charles E. Hill, general safety agent of the New York Central and that of the Committee on Non-Train Accidents, presented by D. G. Phillips, superintendent of safety of the Wabash. Mr. Bailey reported that train service accidents which occur to employees on duty and which are largely controlled by supervision and safety education, have shown a decrease of 44 per cent, the number in 1923 being 38,825, and the number in 1929 being 16,951. In his report he considered each group of train service accidents, including those occurring while coupling or uncoupling cars or locomotives, those occurring while coupling or uncoupling air hose, steam hose or safety chains and those associated with the operation of locomotives, hand brakes and switches.

Mr. Hill reported on the progress made with the Bureau of Statistics in developing a suitable method of handling questions pertaining to the classification of accidents reported to the Interstate Commerce Commission and the handling of inquiries made to the Commission so that both the questions and answers would be transmitted to all member lines for their information and guidance. He also offered a resolution, calling for a uniform method of assembling data sent to the Commission so that the reports of all railroads will be comparable. This was adopted by the members.

L. G. Bentley Summarizes Safety Work During Year

L. G. Bentley, chairman of the section, gave a summary of the progress made during the year. He spoke in part as follows:

The safety records of all railroads have become common knowledge, with the natural and encouraging result that those railroads with poor safety records find themselves on the gridiron of their own disapproval, and those making startling reductions become shining marks. In some cases doubt exists as to the integrity of these records, the implication being that, without statistical manipulation, it is not possible for two properties, operating under practically comparable conditions and with the same kind of men, to produce safety records so greatly at variance as is frequently the case.

The chairman does not share these doubts, it having been his observation and the result of his investigation that the more successful the safety performance, the more the performer steps into the spotlight, and it becomes both his necessity and his desire to go into that spotlight with records above reproach.

At the same time, with hundreds of different persons construing the reasonable requirements and interpretations of the Interstate Commerce Commission, as to the reportability of railroad accidents, it naturally follows that those rules and interpretations are differently understood, particularly by different departments on different railroads. It is a certain consequence, that on the one hand, we will find the reporting officer with no vital interest in a good safety record, who has but scant knowledge or interest in operating requirements and who finds it easier to report a questionable accident than to develop that it need not be reported, while on the other hand we find the operating officer vitally interested in the safety, comfort and happiness of his men and in writing a good safety record. The exigencies of the case require that he shall be familiar with all that is to be known, not only as to causes and preventive measures, but as to the physical condition of his men and their ability to serve the interests of the railway and themselves. This officer, it would seem, is most completely equipped by both knowledge and desire to interpret and execute the requirements of the Interstate Commerce Commission as to his own operating responsibilities.

To the end that there may be an adjustment of existing misunderstandings and consequent irregularities in reporting methods, the chairman, with the approval of the Committee of Direction, appointed a special committee with Charles E. Hill, general safety agent, of the New York Central, as chairman, to negotiate with the Bureau of Statistics, Interstate Commerce Commission, a series of interpretations and rulings, based on certain borderline cases having their numerous counterparts throughout the country, with the request that these interpretations and rulings shall be broadcast to the mutual understanding and advantage of all.

The Harriman Awards

Each year a gold and a silver trophy, designated as The Harriman Memorial Awards, are awarded by the American Museum of Safety to those railroads of distinguished accomplishment in accident prevention. These awards have greatly inspired and dignified the safety movement. During past years it has been our belief that the terms of the award were in some respects unbalanced, as certain classes of accidents were too heavily weighted, while others were of such nature that a heavy handicap was encountered by many railroads with practically no hope of recovery. The Committee of Direction has during the past year worked closely with the Committee of Award, the Bureau of Railway Economics, and the National Safety Council in an endeavor to adjust points at issue.

The joint efforts of these organizations have been successful, and in the award for 1929, the following changes are noted: Fatal injuries are weighted on the basis of 5 points, instead of 50 points as heretofore. Persons excluded from consideration in the past have been trespassers only, while under the new arrangement there have also been excluded persons injured at crossings which were protected at the time by crossing gates; watchmen, or visible and/or audible signals that indicate the approach of a train, and persons injured as a result of the vehicle or pedestrian running into the side of the train. The weighting of accidents involving other persons (which include highway crossing accidents except as above) has been lowered from 250,000 locomotive miles to 50,000 locomotive miles, thereby reducing the handicap on a class of accidents not wholly within the power of the railways to prevent.

We can point with heartfelt pride and satisfaction to a constantly declining accident rate among employees, passengers and trespassers. Without subjecting you to the mystifying mazes of complicated comparative figures, I mention the particular items which are representative of general progress, as follows:

There was in 1929, over 1923, a decrease of 10,172 train accidents.

The number of employees killed on duty on all steam railways show a saving of 592 lives or a 31 per cent decrease, and the prevention of 91,870 employees injured, a decrease of 60 per cent. There was a decrease of 64 subsequent deaths among employees on duty, equal to 33 per cent.

In 1929 vs. 1923, there was a decrease of 43 passengers killed and 2,092 passengers injured, representing 30 per cent in killed and 32 per cent injured.

There was a decrease of 512 trespassers killed and 715 trespassers injured, representing a decrease of 18 per cent killed and 22 per cent injured.

It is among other non-trespassers, largely those involved in highway crossing accidents, that an increase of 274 persons killed or 12 per cent is noted. The injured remained about stationary.

Finally we find that in respect to all accidents involving all persons, there were in 1929, 889 fewer persons killed and 94,717 fewer persons injured in railroad accidents than there were in 1923, a decrease on all counts of 53 per cent.

When a decrease of 12 per cent in man-hours (employees on duty, Class I railroads) is taken into consideration we may properly decide that the safety situation among employees on duty, through your efforts, is 55 per cent more favorable than it was before we undertook the quest of the goal to be accomplished by December 31, 1930.

In this connection, it is worthy of special note that of all railroads with fifty million or more man-hours each, only four have failed to keep up with the program.

Note should be taken of the disparity in the percentage of reduction in fatal vs. non-fatal injuries to employees on duty.

This is perceptibly due to the success of many supervising officers in restoring to regular duty employees injured in minor degree. This has been done by the application of prompt and efficient first aid and by judicious moral influence. This is commendable and does not detract from the good records of those producing them, nor should the few cases where this principle has been imposed upon be taken as the rule, but the exception.

H. R. Lake Describes Methods of Promoting Safety

H. R. Lake, superintendent of transportation of the Atchison, Topeka & Santa Fe, related several interesting and instructive experiences encountered during his participation in the development of safety on that road. His paper in part follows:

My plan in brief was to open up the safety meetings to every employee on the division and not confine it merely to members of the Safety Committee. My first attempt met with only fair success, since the men were suspicious. I realized that I would have to build up my attendance at safety meetings if I succeeded in doing anything from a "mass production" standpoint. That, it seemed, was the basis on which I should proceed rather than individual effort.

I observed that the enginemen were careless in sounding the crossing whistle alarm. There were few engineers on the division who did not have their own pet way of sounding the whistle for crossings and it could be understood as being almost anything but two long and two short blasts of the whistle. There was absolutely no regularity as to the place of sounding it, the position being all the way from a considerable distance before reaching the crossing whistle signal board right up to the crossing. The short toot, toot, toot, toot that some of the engineers gave could not be considered an alarm for anything. I issued one or two bulletins about it but it is hard to break a practice of long-standing, no matter how much a man may want to change. I conceived the idea of writing a little story about an engineer and I built this story around a man who was actually in service, using what facts I could and finally a little fiction. In the climax the engineer killed his own mother and father on a crossing obscured more or less by a Bois D'Arc hedge, of which there are many in Kansas, on a rather stormy day, simply because he did not give any warning at all approaching this obscure crossing. I injected a little pathos into it as best I could and it accomplished its purpose. That story wouldn't take any prize, but being built around a man whom most of them were able to identify, it did create interest among the enginemen and trainmen of that division and I had no more trouble with engineers whistling for road crossings. The coach where I held the safety meetings down in the yard, was "filled to the guards" at the next safety meeting.

Another thing I did to engender interest was to carry on a campaign of education, knowing full well that a man who does not know what to do is not apt to do the right thing in an emergency. I realized, upon questioning some of the train and enginemen about train rules, that many of them were "rusty" upon the application of many very important rules. I conceived the idea of carrying on a sort of catechism in the form of circular letters, consisting of, first, a set of some 25 or 30 questions on the book of rules, train orders, etc. I mailed a copy to each trainman, engineman, and yardman. I let them think about those questions for 30 days and you would be surprised to know of the many friendly arguments there were among the men in switch shanties and cabooses and at pie counters over the proper interpretation of the rules having to do with those particular questions and over the question themselves. The following month I issued another set of questions and with that set of questions I gave them the correct answers to the first set of questions, so that if by any chance anyone had the wrong understanding of the interpretation of the rules he would be set right. I carried this on regularly each month for about two years until I covered every question in the book of rules and every form of train order I could think of. You would be amazed at the number of theoretical head-on collisions those men had in discussing those rules, but the net result was that when the catechism was completed the men on that division were well posted on train rules and we had less accidents as the result of a better understanding of the rules. I did not require the men to answer a single question. No doubt if I had required them to answer those questions I would have had an uprising, but on their own volition they would read and discuss them and then would read the answers.

"Boomer" Brakemen Lowered Safety Record

During the first year or two that I was a trainmaster I took care of the seasonal rushes in business by employing "boomer" brakemen and the master mechanic did the same thing with firemen. Those men, in the main, knowing that they were employed temporarily, did not have the same interest in the welfare of the railroad as did our permanently employed men and they caused a great deal of trouble in the way of accidents and otherwise, notwithstanding the fact that many of them were thoroughly experienced men. Once in a while we would get a good one. Finally I decided to overcome that trouble by employing student brakemen—young men who lived along the railroad, and who were recommended to me by agents, section foremen, and others and I spent a great deal of time in schooling these young men as brakemen. The master mechanic did the same thing with firemen. During dull times these young men would return to their homes and work at whatever they could secure, as they had previously done until they obtained enough seniority to hold a regular job. These young men were more interested in their work and in the railroad than the "boomers," and while each of them cost us quite a little in the course of his education, we, in the end, had much more dependable employees. Realizing that these boys had to learn to protect themselves by experience I prevailed upon the older men in the service to give them the benefit of their experience. Finally I wrote a letter to all of the trainmen, enginemen and yardmen on the division and asked them to write down the things that they had learned to do in all their experience to protect themselves from injury. From the many replies I received I worked up a set of suggestions for these young men, totaling 376. There were suggestions paragraphed in this pamphlet for conductors, others for brakemen, others for engineers, others for firemen, and so on. That venture proved of great value.

Now I shall pass on to my experiences in accident prevention work as superintendent. I found conditions pretty much the same as they were on the division where and when I was made trainmaster. There was no particular interest being taken in the safety work. I encouraged the writing of papers on safety by both officers and men and had them read at safety meetings by the writer, if present, or by myself and, of course, I never failed to comment upon the good points brought out and to compliment the writer.

Safety Newspaper Effective

I published a monthly newspaper on safety, produced it in mimeograph form, and furnished each employee with a copy. In this paper I covered all safety activities on the division, reproduced all papers read on safety at safety meetings, showed the attendance by names and position, told of those taking part in the musical or entertainment program and gave them a little pat on the back for their help. In fact I never failed to praise anyone who helped me in the least in safety work. I did this for two reasons, first, because I appreciated what was done and wanted them to know it; second, praise produces results when other methods fail. You know we all like to be praised; like to have our efforts recognized. No man ever gets too big or important not to feel good when praised. I told of our safety record compared with that of other divisions of the railroad and constantly worked the competitive idea for all it was worth. I am a strong believer in competitive operation. Anyone who has a spark of ambition in his make-up responds to competition in any worth-while activity. I made my chief clerk editor of this safety newspaper, which we called the "Panhandle Safety News." It was of great value in developing and maintaining interest in safety. The newspaper consisted of about 20 letter-size pages of closely typewritten material.

Once every two months I held what we called maintenance of way council meetings, which were attended by all section and bridge and building foremen. One of our principal topics of discussion at each meeting was safety. We devoted an entire day to these meetings. At first they were held on Sundays and the attendance was voluntary. These meetings became so interesting that seldom were there any absentees, notwithstanding some of the men came over a hundred miles on their motor cars to attend. Later the management authorized holding these council meetings on a week day and allowed the men full time. I always personally attended these meetings and each time gave a talk especially prepared for the occasion. A superintendent makes a mistake in getting up before his men to talk with nothing particular to say and winds up by saying nothing. Being the boss of the division, the men look to the

superintendent to say something worth while whenever he gets up to talk to them. Don't disappoint them. Some of the best papers I ever read on safety were written by section and bridge and building foremen. A superintendent cannot afford to do less than they.

Recalling the days of the street show of the patent medicine doctor, the thought occurred to me that I might do worse than emulate him in his tactics and that is what I decided to do. I had no difficulty in arranging a program of an hour's good entertainment once a month, or as often as the safety meetings were held. After the first meeting or two I had a waiting list of pianists, singers, dancers, monologuists, and readers, and I was not confined to children alone. Many of the wives and grown daughters and some of the employees volunteered to help out. Attendance quickly jumped from 25 or 30 to from 150 to 425.

Now the plan was much the same as that of the patent medicine doctor. After giving them a good entertainment and getting them in a receptive mood I told them of what we hoped to do in the saving of lives and limbs, loss of time, pain and suffering, and it went over with a bang. Mark me well: whenever you sell the safety idea to the wife, daughter, or son of a trainman, engineman, shopman, or any other employee, you have an everlasting worker for the cause and the chances are that they will have more success than you could ever hope to have in convincing the husband or father that the safe way is the only way.

After getting this plan well under way I worked a little competition into it by turning over the work of arranging the program to the different brotherhood chairmen. Each one vied with the other to put on the best show and get the largest attendance and that friendly rivalry did much toward making it possible to reach our goal represented by our slogan: "Make the Panhandle Division the Safest Place to Work on the Santa Fe." That is just what we did, for we worked our way up from near the bottom of the list showing the number and percentage of injuries by divisions and of injuries per man hour, to the top. From an average of from 35 to 50 injuries per month, we cut it down to 4 minor injuries the last month I was on that division.

Discipline Essential

I do not believe in cramming safety down anyone by strong arm methods, yet I have always been a strict disciplinarian. I have never disciplined a man because he was injured; nor have I criticised him or in any way caused him embarrassment, even though the injury may have been due to his own carelessness, feeling that the injury was enough punishment. If you make the mistake of punishing a man for an injury you are sure to heap upon yourself a mountain of live coals in the form of resentment from fellow workers. It does become necessary at times to discipline foremen under whose supervision injuries occur and once in a while, where the injured man's carelessness is habitual, to remove him from the service, but when that comes about the action is usually well understood by the men. One thing I did invariably was to see that the injured man profited by his experience and that the injury also became an object lesson to others, all of which I did in the kindliest way possible but with firm determination to get the full benefit out of the object lesson every injury presents.

I never had an accident or a hazard of accident on my division but that I made a study of it from the standpoint of my own responsibility. First of all it is the superintendent's duty to find out the cause of every accident and there are very few accidents wherein the cause cannot be definitely determined. If the accident is due to a defective condition, there is evidence of lack of inspection; if it is due to man failure there is evidence of lack of supervision.

W. P. Borland Explains Federal Investigator's Standpoint

W. P. Borland, director of the Bureau of Safety of the Interstate Commerce Commission, in speaking on the subject, "From the Federal Investigator's Standpoint," touched upon the limitations of the Safety Bureau to emphasize the unlimited fields of opportunity lying before members of the Safety Section. He also compared the seriousness of accidents of today and 30 years ago. His address in part follows:

As a federal investigator, the standpoint from which I view the subject of accident prevention is not essentially different from that of members of the Safety Section. Our aims and ideals are identical, but there is a sense in which it may be said that a federal investigator occupies a field of his own.

In connection with all human activities there are inherent risks of injury or death to the individual; he must be constantly on guard to avoid those risks, and through long ages of development the individual has learned instinctively to protect himself against those dangers to life and limb which nature has imposed upon him. There are dangers created by his fellow man, however, for which nature is not responsible, and against which his instinctive training furnishes him no protection. Such dangers arise from pursuit of the various forms of labor in which he must engage to obtain his means of life. To achieve protection against such dangers he must be educated, trained and admonished. He must be made familiar with the details of the labor process in which he is engaged, and of the measures to be observed by him if he would escape its pitfalls.

Unlike the Safety Section, the Bureau of Safety is strictly limited in the scope of its activities by specific provisions of law. Safety appliance equipment on cars and locomotives is covered by detailed specifications, hours of service of operators, dispatchers and trainmen are strictly limited, and the bureau is charged with the duty of enforcing these requirements. The law also provides that we may investigate accidents and make reports of our investigations, stating the causes of the accidents, together with such recommendations as are deemed proper, and the reports are to be made public in such manner as the Interstate Commerce Commission deems proper. The correction of dangerous conditions and practices which may be disclosed by such investigations, when not covered by other provisions of law is left entirely to the discretion and determination of responsible railroad operating officers, no provision being made for the enforcement of recommendations made in these reports.

I have called attention to these limitations of the authority and scope of work of the Bureau of Safety primarily to emphasize the unlimited fields of opportunity lying before members of the Safety Section. Broadly speaking, it is your primary function and your responsibility to discover and take appropriate measures for the correction of any conditions or practices which detrimentally affect the safety of railroad employees and travelers. You have the opportunity and facilities for accomplishing this function before an accident occurs—in other words, your responsibility is the prevention of accidents, whereas the Bureau of Safety investigates, reports and recommends to prevent the recurrence of accident. The extent to which you discharge the responsibilities of your functions effectively and efficiently determines in large measure the amount of accident investigation work required of the Bureau of Safety.

Effects of Safety Laws Hard to Comprehend

The far-reaching effects of existing safety laws can scarcely be fully comprehended. We have come to regard as a matter of course the universal equipment of cars with standard automatic couplers, efficient hand brakes, uniform and adequate safety appliances and the control of trains by means of power brakes. While no doubt the carriers themselves, without compulsory legislation, would have effected material improvements in safety appliance equipment, the law greatly expedited this vast improvement and brought about a degree of uniformity in equipment which could not be secured by voluntary action; as a result there has been a great improvement in conditions of train-service employment and corresponding reduction in accidents to train-service employees. In general, these laws establish standards of safety below which the carriers are not permitted to go; it is left to the carriers themselves to determine how closely they shall work to this limit. The law requires certain appliances having prescribed minimum factors of safety; the carriers may use additional appliances and may increase factors of safety. The law permits train service employees to be on duty for periods of 16 hours; but this is nothing more than a limit and it is left to each carrier to determine whether its regular working day shall be a lesser number of hours. There is no greater reason for a railroad than for an individual to adhere closely to the legal limit.

In a study of the accident record, there are two features which become readily apparent. The first is that accidents of today are not nearly as serious from the standpoint of loss of life as those 20 or 30 years ago. Accidents resulting in the death of 10 or more persons formerly were of comparatively frequent occurrence, while the toll in many cases ran up to 30, 40 or more, often the result of fire breaking out in the wreckage of wooden equipment. A striking example was a head-end collision between a passenger train and a freight train in 1906, which resulted in the death of 43 persons; of this number 42 were passengers, and the bodies of 40 of these

passengers were consumed in the fire which followed the accident. A marked decline in the number of these disastrous accidents began in 1913; they increased during the world war period, and then dropped off quite sharply until finally in the year 1923, the Bureau of Safety made no investigation of a collision resulting in the death of 10 or more persons, and there was only one serious derailment, which was due to a washout. The last collision investigated by the Bureau of Safety in which 10 or more persons were killed was in December, 1926, and since that date there have been investigated only six other accidents in which 10 or more persons were killed; one was a case of malicious tampering, one involved a washout, and the other four involved motor vehicles at highway grade crossings; in other words, none has been directly chargeable to railroad operation. During the calendar year 1929, according to the records of the Commission's Bureau of Statistics, only one passenger was killed in a collision, whereas the toll in some years has been nearly 200.

The second feature which impresses itself upon one who compares earlier accidents with those of today has to do with their causes. Among the most prominent of these as to former accidents, were errors in the handling of train orders; the lack of proper instruction, examination or supervision of employees; employees either young, inexperienced or not qualified in the territory in which they were operating, or men sleeping on duty as a result of long or irregular hours; and accidents resulting from the lack of proper air brake equipment. Of these various features, there are two which still remain to a considerable extent; one is the question of proper transmission, receipt and observance of instruction, examination and supervision of employees.

One other cause of accidents which was present 20 or 30 years ago, and is still a frequent factor, is failure of enginemen either to observe or to obey fixed signal indications. Periodical physical examinations of enginemen, especially after they have reached 50 years of age, is an important precaution and furnishes some indication of whether an engineman is likely suddenly to become physically incapacitated while on his run. Other factors in this situation, such as overlooking or misinterpreting signals, and failure to see signals, due either to weather conditions or to attention being occupied elsewhere, are still present, and it has been the continued occurrence of accidents involving the failure of enginemen, for some reason or another; to obey fixed signal indications, that has resulted in the development and installation of train control and cab signal devices.

Report of Committee on Statistics

T. H. Carrow, chairman of the Committee on Statistics and superintendent of safety of the Pennsylvania, emphasized the need for an analysis of reported accidents, saying that a comparison of the records of the various roads indicates that if the rules governing monthly reports were applied correctly the rates of some would be much lower. The statistics quoted by Mr. Carrow reflected the progress of safety, the number of employees, passengers, travelers on highways and others, including trespassers, killed, being reduced 12 per cent and the number injured 55 per cent in 1929 as compared with 1923. Derailments which cost $150 each also decreased, the number in 1929 being 17,185 or 38 per cent less than in 1923.

Another portion of the report dealt with the economy of safety. During 1929, injuries to persons cost the railroads of the United States $41,828,966 while train accidents, which involve damage to equipment and track and the clearing of the wreck, totalled $19,375,760, thereby making the total known cost $61,204,726. He supplemented this known cost by an indirect cost which is a result of breaking in new men, decreased production, damage to equipment (not included in above amount), damage to freight, interruption to traffic, overtime, etc.

In commenting upon the variations in the casualty rates of the various carriers appearing in the Interstate Commerce Commission reports and the inability of the total rates to reflect the true performance of a road, he called attention to the spread between the best and the worst, saying that the condition is probably due to methods of reporting, the roads with good rates reporting accurately and those with bad rates including unreportable cases. To emphasize these variations, he chose 12 carriers in the Class A group and made comparisons. The rates for all classes of employees in 1929 ranged from 8 to 18 per million man hours, the latter being 2¼ times the former. The road with the best total rate ranks ninth in train and engine casualties or 17 per cent worse than the average. In addition, although this road has the best m.e. non-fatal rate, it has, with one exception, the highest m.e. fatal rate. The road that has the lowest maintenance of way non-fatal rates has the highest fatal rate, while the road that ranks seventh for the total, ranks first for train and engine service. As a further illustration of the inability of the total casualty rate to portray certain favorable characteristics, he said that a railroad with one of the best total rates had 9 "other locomotive accidents" for 34,129,000 locomotive miles or a rate of 0.26, while 8 roads of the same class, but with a total of 160,614,000 locomotive miles, had no accidents.

The variations, he said, were due to differences in preventive measures and in the interpretation and application of rules. To remove these wide variations, he recommended checks to insure the inclusion of all accidents and the use of effective prevention measures.

To obtain a perfect performance, he recommended invariable corrective action rather than severe treatment, suitable rules and instructions such as are now in effect, constant supervision to detect violations of rules and unsafe practices, prompt and thorough investigations of all accidents and all derelictions of duty whether or not accidents result therefrom, fair and impartial corrective action in all cases and complete records for each employee of all derelictions of duty.

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Caterpillar Tractors Haul Western Crawler Wagons in Construction of Embankment Approaches to New Santa Fe Bridge Across the Illinois River

The Railroad Control Inquiry

Chairman Parker of house committee reports as to progress made

WASHINGTON, D. C.

AN explanation of the progress made to date in the investigation being conducted by the House committee on interstate and foreign commerce into the ownership and control of railroads, and especially of the relations between railroads and holding and investment companies, was made in the House on July 2 by Chairman Parker of the committee in connection with the adoption of a resolution authorizing the expenditure of $25,000 for the inquiry in addition to a like amount already provided. The investigation is being pressed with vigor, Mr. Parker stated. Experienced investigators have personally examined the books, files and records of 22 holding companies, including the Pennsylvania Company, the Alleghany Corporation and the Pennroad Corporation; all the Class I railroads have replied to questionnaires showing their principal stockholders and their holdings in other companies, and 700 holding and investment companies also have furnished replies to the questionnaire addressed to them, which have been partially analyzed. Mr. Parker also discussed some of the legal questions involved as to the power of Congress to extend the commission's jurisdiction over holding companies.

The investigation is being managed by special counsel, Dr. Walter M. W. Splawn, former president of the University of Texas, and, at the time retained by the committee referee under the settlement of war claims act of 1928. Through co-operation of the Interstate Commerce Commission a number of experienced field workers have been made available, in addition to trained statisticians and competent accountants. A group of economists, under direction of counsel and including Prof. James C. Bonbright, of Columbia University, has been set to studying the genesis, the development, and history of the holding companies, with a view to determining how they function, and showing their place in American business, together with their advantages and disadvantages. There are a number of difficult constitutional and legal questions connected with this investigation. Counsel has added to the staff M. S. Breckenridge, professor of constitutional law, University of North Carolina, to assist with the legal studies.

There are five lines of major inquiry: First of railroads; second of investment trusts; third of holding companies; fourth, a historical study of the development and functioning of holding companies; and fifth, an examination of the legal questions. The purpose is to complete these studies, if humanly possible, Mr. Parker said, by the time Congress reassembles in December. When the results are brought together the Committee on Interstate and Foreign Commerce and the members of the House will have the facts called for by the House resolution and the information which will serve as a basis for legislation.

In its annual report issued December, 1929, the Interstate Commerce Commission recommended that Congress give thorough consideration to a possible extension of the jurisdiction of the Commission to cover activities which, though not now under its jurisdiction, result in bringing about the unification of control of railroads. The commission pointed out that in section 5 of the interstate commerce act the Congress manifested a clear intent to subject the unification of carriers to the orderly processes of a carefully planned scheme of public regulation.

An abstract of Chairman Parker's statement continues:

As soon as the committee was clothed with the necessary authority it first called the chairman of the legislative committee of the Interstate Commerce Commission in order to find just why the commission has the misgivings which prompted its request for an extension of its jurisdiction. For three days the chairman of the legislative committee of the commission testified before the Committee on Interstate and Foreign Commerce. His statements were sufficient to justify the misgivings expressed by the Interstate Commerce Commission in its last annual report and to justify the House of Representatives in calling for a searching investigation of the methods of control of railroads which may lead to possible unifications of separate properties without the approval of the Interstate Commerce Commission.

The testimony from the commission also discloses the necessity for getting at the facts. The commission frankly reveals that it had in its possession only fragments of evidence. Legislation has been requested to extend the jurisdiction of the commission to include activities of companies which are in a large measure financial or of such character that it may be contended that they are not engaged in interstate commerce. It is obvious that such legislation should not be framed in the absence of complete knowledge of all the facts. Without such knowledge the very purpose of the Congress in passing the requested statute might be defeated. Moreover, untold and unforeseen harm might follow an effort to legislate in this new field without the exact knowledge which can be had only as a result of the most searching inquiry. The committee is convinced that the commission did well to ask for a careful and searching investigation. Before the Congress can reach out and place such activities as above mentioned within the jurisdiction of the commission it should be fully advised as to all the possible results that might follow, and that the proposed legislation would reach the evil of which complaint has been made. Moreover, it should know just how much of evil is inherent in the situation to which the attention of the Congress has been called.

The committee employed counsel to assist it in directing the investigation. Counsel was authorized to organize such a staff as was necessary to make the desired studies and researches. Counsel immediately set about outlining the work and providing a personnel to do it and organized a small staff. A much larger staff would have been necessary but for an arrangement with the Interstate Commerce Commission, whereby it made available to counsel, such expert statisticians and accountants as might be required. This arrangement had several distinct advantages: First, it brought to the investigation men highly competent and experienced in the type of investigations which is being pursued. Second, it saved the committee what otherwise would have been a very large expenditure, if it had been compelled to make contracts with firms of public accountants and statistical organizations as would otherwise have been necessary. For several weeks 10 of these trained experts in the commission have been giving practically all of their time to this investigation. From time to time several others have worked as required.

In order to find out how holding companies, investment trusts, and the like own and control railroads, and how such holding companies are themselves controlled, it was necessary first to make inquiry of the railroads. The resolution specifically directs that an investigation may be made of the common carriers engaged in interstate commerce to the extent necessary to determine the effect of their being owned and controlled where such ownership and control is shown to be by holding companies, investment trusts, and the like.

Obviously, the carriers themselves could reveal much con-

cerning their ownership and control. To call each one of 175 Class I railroads before the committee would have required an investigation almost interminable in length. In order to conserve time and get the desired information speedily and with as little expense as possible to the Congress, counsel prepared a questionnaire to be sent to each Class I railroad.

The Questionnaires

The questionnaire calls for a revelation of all outstanding stock and classes of securities having voting rights, for the number and voting power of the security holders, for a statement by whom the respondent railroad is controlled and the manner and extent of the control, for a list of the 30 largest security holders with the number of votes to which each is entitled, for the names and addresses of officers and directors with a statement of the other business enterprises in which each officer or director of the railroad is a director, for a revelation of the holdings of respondent railroads in stocks or other securities having voting rights, of common carriers engaged in interstate commerce, for a further revelation of each respondent railroad's holdings in any corporation, holding company, investment trust, or other organization or agency which holds or deals in the securities of common carriers, and finally for the respondent's holdings of any stock of any corporation whatsoever. In the event that the respondent railroad holds 10 per cent of the voting stock of a corporation, the carrier was required to reveal the extent of the holdings of such company or companies in any and every railroad and to describe the nature of the business in which such corporation is engaged.

The questionnaire was so comprehensive and searching that some members of the committee privately expressed the opinion that the carriers would resist filling it out, and that the committee might have to resort to the courts to compel answers. Considering the amount of information called for and the amount of correspondence involved within each corporation, the questionnaires were made returnable as of June 1, 1930. Four or five roads found it quite difficult to assemble the data within the limit set and upon a showing were granted a reasonable extension of time. With those exceptions all the questionnaires were returned by or before the date set, and the few which found it necessary to ask for more time have completed the work of filling in answers to the questions and have sent in the questionnaires, so that now returns are in from all the companies.

In looking through these questionnaires it is found that the carriers have been painstaking in trying to set forth in detail the information called for. Each and every officer and director of each railroad company revealed the companies of whatsoever character in which he is an officer or director. Each railroad set down the companies owned and controlled by other corporations in which the respondent railroad itself owns as much as 10 per cent of the voting stock. These answers were made under oath by an official of the company who was familiar with the facts and could vouch for their correctness. These returned questionnaires constitute a most comprehensive record and are a most valuable part of the record which will be made in the course of this investigation.

The searching character of the questions and the cooperation and understanding shown by the carriers in responding to the questionnaire make the returns a rich storehouse of information as to where and by what means, direct or indirect, the control of many of our railroads is held. In so far as control rests in other carriers or their subsidiaries, the returns of the various railroads are supplementary and a check on one another. They therefore afford exceptional means of relating interests or controls in whichever direction they may run.

In addition to the inquiry directed to the railroads themselves with a view to determining the significance of ownership and control of railroads by holding companies and investment trusts, it was necessary to go to the investment trusts and holding companies direct. Counsel set about inquiring as to what investment trusts might be interested in railroad securities. There was no way to ascertain that except by calling the companies themselves. The companies could not be called without knowing their corporate names and locations. After considerable inquiry through all the agencies possible, including the finance and investment division of the Bureau of Foreign and Domestic Commerce, counsel prepared what is the most complete list of investment trusts which has been made in this country. In that list were the names of 700 companies. For the same reason that it was impracticable to call each of 175 railroads for personal testimony by its officers, it was likewise impracticable to call several hundred investment trusts. Counsel prepared a questionnaire sent to each of these companies.

This questionnaire asked, among other things, for a report on investment practices—that is, the kinds of securities held, the degree of diversification, the maximum percentage of any company's voting securities which it is their policy to acquire, and so forth. The number of holdings on March 31, 1930, classified as between voting and other securities and between the securities of common carriers and of other corporations, were also to be reported.

This questionnaire called for a classification of each company and a revelation of its character. Each investment trust was required to disclose:

First. The number of railroad companies whose securities are held.

Second. The number of different companies whose securities are held.

Third. The approximate percentage of total capital invested in the securities of each such corporation.

Each investment trust was further required to furnish the names of its officers, directors, or trustees and copies of its latest annual report.

A full response has been made to this questionnaire and a considerable part of the analysis of the returns has been completed. This analysis has brought out that investment trusts, as such, because of the diversification practiced and the small size of the individual holdings, are not commonly instruments of control. This conclusion is applicable even in the case of the majority of those investment trusts, few in number, which concentrate on railroad securities.

However, after this process of elimination, there are left a group of companies which merit further inquiry. Some fall into this group because of their large size; others because along with a considerable diversification of holdings generally goes an appreciably large holding of the securities of railroads or railroad holding companies; others because they are in fast holding or investing companies through investment trust in name; and others because of certain definitive information in the returns. In such cases the control exercised over and by such companies and their affiliations with one another and with other financial institutions are subjects requiring attention.

In this connection it is important to note that, owing to the recency of their development and to the unusual financial conditions of the past two years or more, many investment trusts have not yet found themselves and at present lack a clear course for the future. Also, far fewer investment trusts have set up restrictions on their investment practices than previous analyses have indicated. This flexibility of breadth of powers are factors which must be carefully weighed in passing upon the potentialities of investment trusts as instruments of railroad control.

Of the holding companies to which questionnaires were sent a majority have been eliminated from further consideration, owing to the fact that their holdings are limited to defined fields (public utilities, aviation companies, etc.). Others are not of sufficient magnitude to require further attention. The remaining returns from holding companies are being analyzed and additional information will be sought before final disposition of them is made. Coordination of these returns with those made by the railroads in response to the questionnaire sent to them will call for further inquiry.

Since there are so many investment trusts and since only a few of them participate in controlling common carriers, it was practical to call them by questionnaire. Counsel decided that so far as the holding companies themselves were concerned, those the character of whose activities are unknown might first be called by questionnaire.

The holding companies believed to control railroads are being investigated by sending expert accountants to examine their books and files. Time may not permit to investigate every such holding company, but a sufficient number can be examined by sending investigators to them directly that the results will enlighten the House of Representatives as to the typical performances of such companies. Already, for several weeks counsel has had from 8 to 10 experts at work in the offices of holding companies. They have gone through the minutes of meetings of directors and the accounts, records, and other files, so as to get correct information of the ownership and control of stock, of other securities or interest in any common carrier by such holding companies, and so as to determine the effect of such ownership and control on interstate or foreign commerce. Twenty-two holding companies have already been so examined and are in the process of being examined. A number of others have still to be examined.

Holding Companies

The holding company is not a new device. One of the most important holding companies in the railroad field (the

Pennsylvania Co.) was organized in 1870. Holding companies have been very active in industrial corporations and in the field of public utilities other than railroads.

What was the genesis of the holding company? Why was it first used? How did it develop after it began to be used? What is the source of its popularity? How has it been made to function? What is its history? What attempts have been made to regulate it by States? How has it been modified by such attempts at regulation? How has it been used in the field of industry in order to achieve control? How has it been used among utilities other than railroads in order to achieve control? How has it been used in the railroad field in order to achieve control?

The answers to such questions as these will be of great assistance to the Committee on Interstate and Foreign Commerce and to the members of the House of Representatives when they finally come to consider the recommendations of the committee. The answers to most such questions are to be found in the decisions of State courts and in a literature which is widely scattered. The answers to such questions would enable members of Congress to judge the possible trend of holding-company development and activity in the field of common carriers engaged in interstate commerce. To dig out the answers to such questions will require the labor of competent economists. Counsel has worked out plans for such a study and has employed such economists and assistants as are necessary to enable him to bring the study to a conclusion within the allotted time.

As soon as the committee undertakes to draw a bill it will confront some very difficult legal questions. For example, such questions as:

Legal Questions

Can the Congress go further in regulating holding companies than it has gone in existing antitrust legislation?

Is the regulation of the purchase, ownership, holding, and control of securities of a railroad corporation, created by a state, engaged in interstate commerce, by individuals or state corporations, within the power of Congress under the "commerce" or "necessary and proper" clauses of the Constitution, and/or is it an invasion of State rights under the tenth amendment and/or a taking of property without due process of law under the fifth amendment?

This will involve the investigation of the following more specific problems, among others:

I. Is the sale and/or ownership of securities in common-carrier corporations engaged in interstate commerce itself interstate commerce so as to give Congress power of regulation: and if so, to what extent may such regulation be exercised?

II. Is control of any interstate carrier through stock ownership sufficiently direct in its bearing upon interstate commerce to warrant Congress in restricting such stock control to cases which it or the Interstate Commerce Commission considers to be in the public interest?

III. What interest is sufficient to constitute control, or should this be left for determination as a question of fact in each case?

IV. Should Congress desire to prescribe certain tests for determining whether stock control of any carrier is in the public interest (as, for example, effect upon competition, labor, etc.), and how could this be done, or what constitutional limitations or prohibitions would have to be avoided?

V. Can the Interstate Commerce Commission under proper legislative authority from Congress—

A. Require from holding companies, investment trusts, etc., organized under State laws, regular reports concerning their interest in interstate carriers?

B. Regulate the use of such stock ownership as by prohibiting the exercise of voting rights where such exercise would be harmful to the public interest?

C. Prohibit the acquisition of additional stock in any interstate carrier?

D. Require the disposition of any stock held contrary to the public interest?

VI. May like regulations be imposed upon individuals who own or control securities of common carriers engaged in interstate commerce?

Counsel has retained a constitutional lawyer to assist in studying some of these questions.

There are five major lines of investigation which are being pursued:

I. That of the railroad companies which is mainly by questionnaire and which is to elicit who owns and controls each railroad and what other railroads or companies interested in railroads are in turn owned or controlled by each railroad.

II. The second major line of investigation is that of financial institutions, also bv questionnaire, with a view to determining whether or not they participate to an appreciable extent in the ownership and/or control of a railroad, and if so to what extent, if any, any railroad owns or controls the financial institution.

III. The third line of investigation is primarily of holding companies and is by field workers who through examination of books and records are gathering the facts which would show to what extent each such a holding company is owned or controlled by a railroad and in turn itself participates in the ownership and control of railroads.

IV. The fourth line of investigation is a comprehensive study of the holding company, beginning with its genesis and tracing its history and showing its advantages and disadvantages.

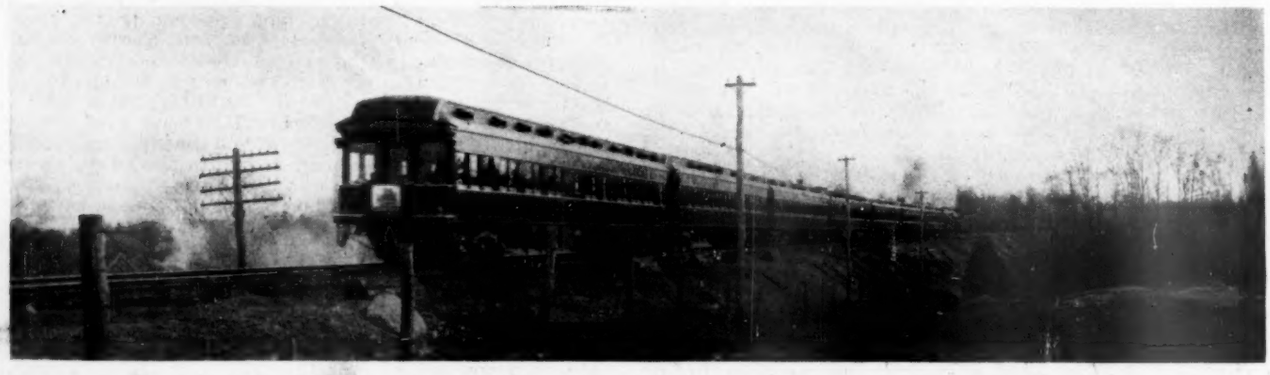
V. The fifth line of inquiry is directed to the legal questions involved in an attempt to extend the jurisdiction of the Interstate Commerce Commission.

The results from any one of these lines of inquiry will tell only a part of the story. A complete presentation of the real situation can be had only after the results from each of these five inquiries are brought together. This completed picture will show, on the one hand, the ownership and the control of stock, securities, or capital interests in any common carrier by holding companies, investment trusts, individuals, partnerships, corporations, associations, and trusts, and, on the other hand, will show the ownership and control by the carriers themselves of such holding companies and the like which participate in the control of railroads, and will enable the Congress to determine the effect of such ownership and control on interstate and foreign commerce. With this information properly summarized from these five lines of investigation and research, it is believed the House will have the information necessary as a basis for legislation.

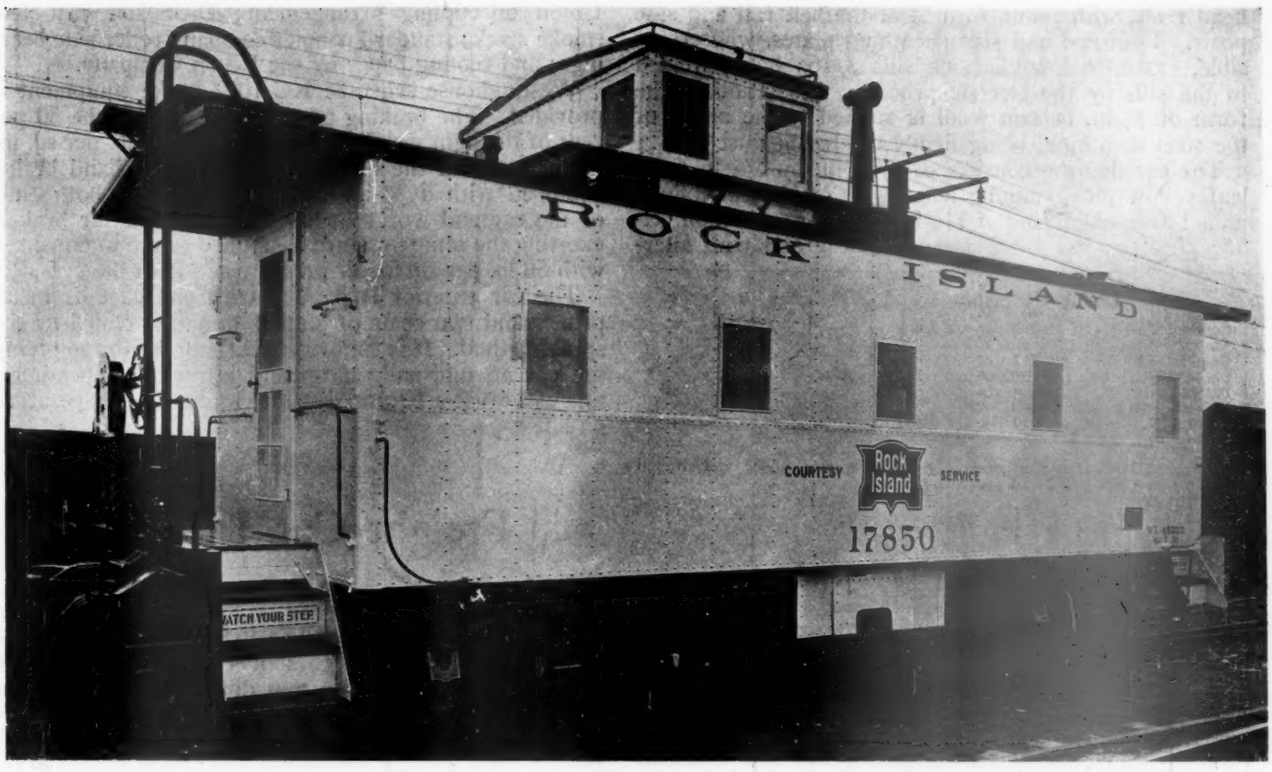
A subcommittee will supervise the investigation during the summer and the fall. It is hoped that the committee will be able to present a report as soon as Congress convenes.

In the event that the committee should meet with reluctance to make disclosures and have to issue subpoenas and perhaps resort to the courts, it is difficult to estimate what the expense would be. It is believed that the amount requested will be sufficient to carry the investigation through to a successful conclusion, including expenses incident to the hearing which it may be necessary to hold next winter.

* * * *



The New York, New Haven & Hartford's "Yankee Clipper" Near Canton Junction, Mass.



Aluminum-Painted Caboose with Exterior Riveting and Finish Comparable with that of Passenger Cars

Rock Island Gets Fifty Modern Caboose Cars

Aluminum-painted steel car, embodying latest features of construction, presents striking appearance

THE first of a series of 50 29-ft. modern steel caboose cars, now under construction at the Blue Island (Ill.) shops of the Chicago, Rock Island & Pacific, has recently been completed. The car is notable for sturdy construction and for riveting and general finish comparable with passenger car equipment. The exterior is finished in aluminum paint, with the principal objective of reflecting, as much as possible, the rays of the sun and, hence, making the car interior more comfortable on hot summer days. The aluminum paint, which is thus used for the first time on a caboose car, also gives the car a striking appearance.

The new Rock Island caboose car is 29 ft. long over the end sills and 15 ft. 1 in. high from the top of the rail to the top of the cupola roof. It weighs 46,900 lb. The car body is carried on the latest type of Bettendorf 60,000 lb. capacity swing-motion trucks, equipped with 4¼-in. by 8-in. journals. The steel underframes, fabricated and assembled at Blue Island shops, consist of two standard 12-in. A. R. A. section center sills, spaced 12⅞ in. apart and provided with a 20-in. by ⅜-in. coverplate which gives a total cross-sectional sill area of almost 31 sq. in., and a strength equivalent to that of the 100,000-lb. A. R. A. standard box car. This is essential because the caboose will often be used between the locomotive and the train in heavy pusher service.

The two angle side sills extend continuously from body end sill to body end sill and the ⅜-in. bent plate end sills, pressed pan body bolsters and pressed pan cross ties are all securely riveted together. Draft lugs are also riveted to the center sills. The cross-bearers, two per car, are made of 5/16-in. pressed diaphragms, flanged on all sides and riveted to the 6-in. by ⅜-in. top and bottom coverplates, the side sills and center sills. The body bolsters, made of two 5/16-in. pressed pans spaced 4½ in. apart, have top and bottom cover plates, a pressed-steel stiffener over the side bearings and a cast-steel center filler between center sills. Every detail of the underframe and superstructure design was developed with a view to construction with minimum labor. An all-metal tool box, strongly constructed of angle iron and steel sheets, is set in the frame before assembly of the car sides.

After fabrication of the superstructure, including Z-bar and channel posts, angle side plates, end plates and cupola posts and plates, the sheathing is applied. This sheathing consists of No. 12 gage, open-hearth, copper-bearing steel, riveted to the framing with ⅜-in. button-

head rivet, with joints formed at the belt rail and side posts. Both end and side sheathing plates, where possible, extend below the side sills 3/16., being welded to the sills by the electric process. Insulation in the form of ¾-in. balsam wool is applied to the inside of the steel sheathing, being firmly cleated against it.

The car flooring consists of 3/16-in. by 3¼-in. long leaf yellow pine, running lengthwise of the car, blind-nailed to a subflooring of 1½-in. by 5¼-in. common yellow pine running crosswise of the car and with alternate boards bolted through the side sills and stringer. The entire top surface of the subfloor is covered with a ⅛-in. layer of water-proofing compound, on top of which is applied a layer of building paper. Water-proofing compound is also applied at the side and end walls of the car at the floor to seal the joints.

Inside Furnishings and Finishings

1 Conductor's flat-top desk with lock and case
1 Stationery rack in conductor's desk
1 Conductor's clothes closet in conductor's end
1 Set of lockers (built in) under one side of cupola
1 Washstand
1 Drinking-water cooler
1 Stove (securely fastened to the car floor)
1 Cast-iron stove jack
1 Coal box
(Note: Galvanized iron and asbestos is applied under and around stove as a fire shield and preventive)
1 Lantern rack
2 Fusee holders
2 Lamp jacks in roof for lamps
2 6-in. Globe ventilators with damper
(ventilators located in body of car)
1 Ice box
1 Porcelain-lined dry hopper with seat and cover
1 6-in. Globe ventilator with damper in toilet room

The car roofing consists of 3/16-in. by 3¼-in. long leaf yellow pine, well nailed to the carline fillers and covered with one course of roofing paper and an eight-ounce treated canvas duck in one piece, extending down over the outer face of the fascia. This canvas is well stretched and nailed with 14-ounce galvanized tacks. The flashing, of 10-lb. copper, is used at the sides and ends of the cupola and roof, and for the cupola, end and side window sills.

The cupola, about 5 ft. long by 8 ft. wide inside of the lining, is constructed with a steel frame having two 3-in. channel carlines, angle side plates and end plates. The corner posts are made of 3-in. angles, riveted to the body side posts and connected to the cupola side and end plates by means of gusset and angle connections. Eight windows in the cupola include two on each side, two front and two back, all being equipped with single sash, the side windows sliding and the end windows hinged.

The interior of the cupola is provided with four cushioned seats, one at each corner directly under the side windows. These seats are placed on the platform or floor which consists of 13/16-in. by 3¼-in. tongued-and-grooved yellow pine, supported by means of 1¾-in. by 2½-in. posts and wrought iron strap on the conductor's side and by partition and posts on the other side. The cupola is equipped with a cut-out cock and air gage.

The inside furnishings and fittings of the new Rock Island caboose car have been carefully studied with a view to the maximum convenience and comfort of the crew. A detailed list of these fittings is shown in the table. The car is equipped with three large lockers, a toilet, ice box and writing desk. Four upper berths are provided, three in the passenger end and one in the conductor's end. The conductor's end also is fitted with a long seat, which can be converted into a bed.

Specialties used in this car include the Morton three-tread step with Morton safety treads; Ajax hand brake; Royal brake regulator for taking up slack due to worn brake shoes; Forsythe draft gears and Type-D coupler; Union uncoupling arrangement; Dickinson cast-steel smoke stack; standard coupler company roller side bearings; and roofing paper by the Lehon Company.

Westinghouse schedule KC 1012 brake equipment is provided. The braking power is designed to be 50 per cent of the light weight of the car, with 50 lb. per sq. in. air pressure in the brake cylinders. The hand brake, equipped with a ½-in. chain, brakes from both ends of the car and works in harmony with the air brakes, exerting the same pressure as applied to the brake shoes with 50 lb. per sq. in. air pressure acting in the cylinder.

The car exterior is painted with one coat of metal primer and two coats of aluminum paint applied by the spray method. It is estimated that, in addition to giving the car an unusually clean and attractive appearance, this will cause a 10-deg. decrease in interior temperature on hot days.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended June 28 amounted to 936,848 cars, an increase of about 16,000 cars over the loading for the week before but less than that during the last week of April, two months before. As compared with the corresponding week of last year this was a reduction of 159,721 cars and as compared with 1928 it was a reduction of 66,851 cars. The largest decrease was in miscellaneous freight, of which the loading was 68,442 cars less than in the corresponding week of last year, but all commodity classifications showed reductions, and all districts reported reductions as compared with both 1928 and 1929. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended June 28, 1930

Districts	1930	1929	1928
Eastern	209,800	254,562	233,494
Allegheny	189,705	226,084	207,091
Pocahontas	52,625	61,836	53,171
Southern	126,601	140,379	138,398
Northwestern	145,816	176,200	157,554
Central Western	137,956	156,634	137,785
Southwestern	74,345	80,874	76,206
Total Western Districts	358,117	413,708	371,545
Total All Roads	936,848	1,096,569	1,003,699
Commodities			
Grain and Grain Products	48,847	51,963	36,797
Live Stock	20,565	22,973	24,213
Coal	137,521	162,055	146,289
Coke	9,391	12,277	9,705
Forest Products	47,947	69,498	66,809
Ore	61,034	76,657	68,335
Merchandise L.C.L.	239,544	260,705	258,899
Miscellaneous	371,999	440,441	392,652
June 28	936,848	1,096,569	1,003,699
June 21	920,859	1,069,874	987,360
June 14	926,093	1,069,670	1,002,813
June 7	935,647	1,055,768	995,570
May 31	860,249	972,825	934,673
Cumulative total, 26 weeks	23,207,306	25,616,953	24,461,773

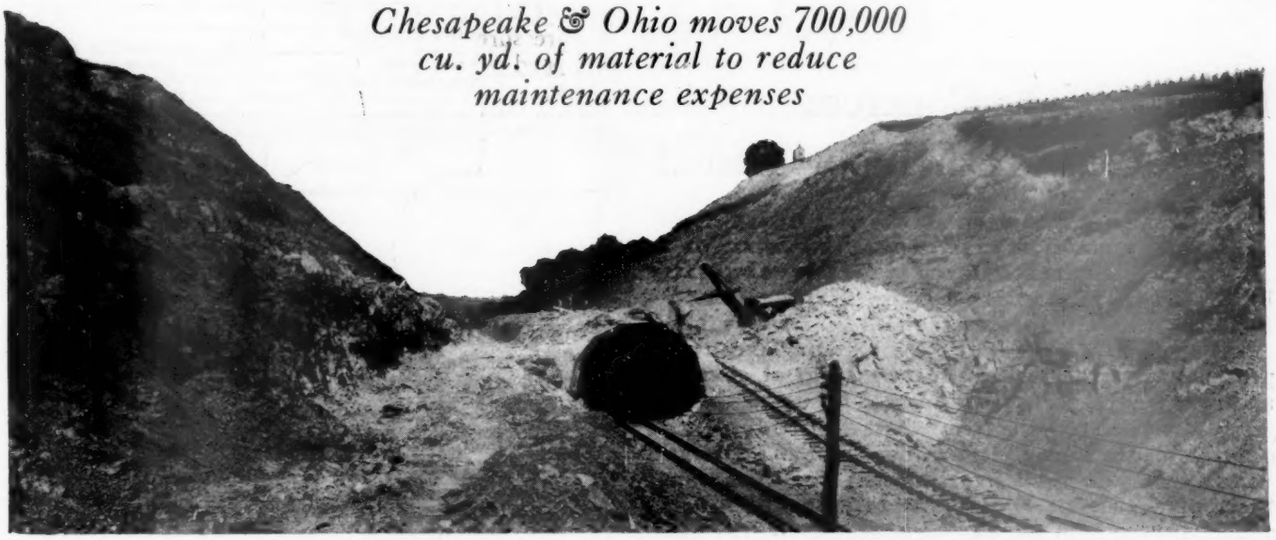
Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended June 28, totaled 63,061 cars, a decrease from the previous week of 769 cars and a decrease of 11,120 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
June 28, 1930	63,061	30,270
June 21, 1930	63,830	30,918
June 14, 1930	64,609	31,514
June 29, 1929	74,181	40,618
Cumulative Totals for Canada		
June 28, 1930	1,528,716	922,674
June 29, 1929	1,706,560	1,108,546
June 30, 1928	1,663,898	1,024,150

Daylighting a 1400-Ft. Tunnel

Chesapeake & Ohio moves 700,000 cu. yd. of material to reduce maintenance expenses



A View After the Tunnel Was Almost Entirely Uncovered

AFTER about ten months of practically continuous excavating operations through clay, shale and solid rock, in which about 700,000 cu. yd. of material was removed, the Chesapeake & Ohio uncovered a 1400-ft. double-track tunnel at Ona, W. Va., and demolished it in a plan which substituted for the tunnel a deep open cut. The significant features of this work, which eliminates tunnel maintenance at this point, were the size of the cut necessary, which is about 300 ft. wide at the top, and 112 ft. deep, and said to be the fourth largest railroad cut in this country; and the speed and effectiveness with which the work was carried out.

The Ona tunnel, which was located on the C. & O.'s main line, about 13 miles east of Huntington, W. Va., was holed through in 1907 in connection with the line extension at that time. It was entirely in rock, and for a number of years was adequate to carry the traffic presented and required little maintenance. In recent years, however, the tunnel has been the point of limiting clearance for train operation between Cincinnati, Ohio, and Charleston, W. Va., and the maintenance of the tunnel itself has been costly. In view of these disadvantages, it was a question of enlarging and lining the tunnel or replacing it with an open cut. Although the latter course was known to involve extensive and costly excavation, it was finally decided upon as most desirable and economical in the long run.

Excavation Proceeded Rapidly

Actual work on the cut was started about the middle of November, 1928, and as excavation continued, solid rock was encountered about 16 to 18 ft. below the surface of the ground. This extended throughout the length of the cut and to its full depth. Working throughout the winter, about 400,000 cu. yd. of material, largely rock, had been removed by March, 1929. Continuing at a rapid rate, approximately 95,000 cu. yd. additional was moved in June and about 85,000 yd. in July. By October 15, practically all of the grading work had been completed.

When the work was started, four Lorain-75, 1¼-yd. gasoline shovels on caterpillar mountings were put in operation, together with a fleet of standard auto dump trucks and iron mules. The sides of the cut were given a one-to-one slope; this being done by the skillful operation of the shovels themselves, without the necessity of hand work. The average haul of the material from the cut was about 2,000 ft., the material at the higher levels having been trucked to waste banks on each side, and that in the lower part of the cut having been carried to waste deposits at each end.

While the Lorain-75's were effective in handling the soil in the top of the cut, it was expected that larger railroad-type shovels would be necessary to handle the rock in the lower levels expeditiously. However, as the work progressed, the Lorain-75's proved equal to the task imposed by the rock, and were, therefore, continued in use. During the early part of the work the shovels were run two 10-hr. shifts daily, but later on, when extensive blasting operations became necessary, the actual excavation work was cut down to the daylight hours.

Hauling equipment employed during the latter stages of the work consisted of motor trucks, Linn tractors, iron mules, and five-yard, two-way side-dump cars operated on track of 36-in. gage. The dump cars were hauled in trains of four cars each by Plymouth and Midwest gasoline locomotives.

Before excavation was permitted directly over the tunnel, the tunnel was reinforced throughout with 12-in. by 12-in. timbers and lined with heavy sheeting to insure positive safety of train operation through the tunnel while the work was being carried on. When excavation was completed to grade along the south side of the new cut, a run-around track was constructed along this side to carry the main-line traffic while the tunnel was being demolished. Following this procedure, no interference with traffic was caused throughout the work.

All of the work in connection with the tunnel elimination project was carried out under the direction of

C. W. Johns, chief engineer of the C. & O., by Langhorne & Langhorne Company, Inc., Huntington, W. Va., railroad contractors. A. M. McLeod, superintendent for the contractors, was in charge of the field operations.

Light-Weight Concrete Car Floor Tested

IN January of this year the Universal Atlas Cement Company made an experimental installation of a Haydite concrete floor in one of the private box cars, UPCX 971, owned by this company. Haydite is manufactured from clay, ground, burned in a rotary kiln, fused at about 2,000 deg. F., the resulting expansion process causing a cellular structure of great strength and light weight, particularly adapted for use as the aggregate in concrete structures where light weight is a desirable characteristic. It was used in the Universal Atlas Cement Company's car in order that the advantages of a concrete floor might be obtained, with a minimum penalty in the way of increased floor weight.

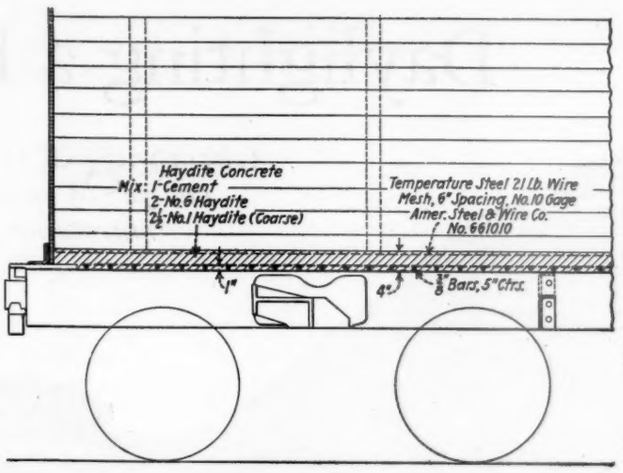
The concrete floor, applied in the car illustrated, is 4 in. thick, laid by means of forms directly on the steel underframe, and reinforced by ⅜-in. steel bars laid 5 in. center-to-center both longitudinally and crosswise of the car and in the lower one inch of floor thickness. These bars are lightly welded together at each intersection. As a measure of precaution against cracking or crumbling of the floor surface, additional reinforcement in the form of No. 10 gage steel wire mesh is laid just under the surface of the floor. The mixture of Haydite concrete consists of one part of cement to two parts of No. 6 Haydite and 2½ parts of coarse No. 1 Haydite. The carfloor is not anchored to the sides as it was not designed to be subject to stress as a result of the weaving action of the car. A seal is provided, however, around the edges of the floor in order to make it tight and prevent leakage of the car contents. Channel iron strips are placed at the doorways as a protection for the concrete edges.

Estimated Weight of Haydite Floor in UPCX Car No. 971

Car dimensions and unit weights	
Outside dimension of car	40 ft. 10 in. by 9 ft. 3 in.
Floor thickness	4 in.
Volume of ⅜-in. reinforcing rods	1.31 cu. ft.
Volume of No. 10 reinforcing wire	.14 cu. ft.
Volume of Haydite concrete	123.18 cu. ft.
Weight per cu. ft. Haydite concrete	106 lb.
Weight per cu. ft. reinforcing steel	490 lb.
Dimensions of old floor removed	40 ft. by 9 ft.
Weight per sq. ft. of old floor removed	6 lb.
Weight per sq. ft. of Haydite floor	36 lb.
Total floor weights	
Weight of Haydite concrete	13,057 lb.
Weight of reinforcing steel	710 lb.
Weight of 4-in. channel used for door sills	65 lb.
Total weight of new floor	13,832 lb.
Weight of wood floor removed 1⅛-in. figured	2,160 lb.
Increase in weight due to Haydite floor	11,672 lb.
Track scale weights	
New tare weight	58,800 lb.
Old tare weight	46,800 lb.
Increase in car weight	12,000 lb.

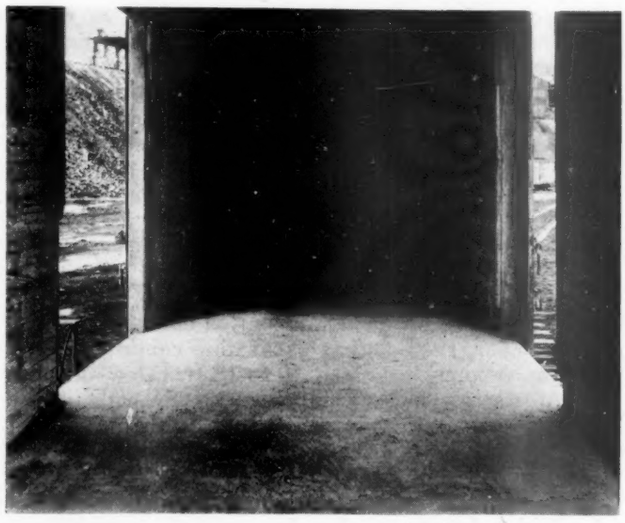
Additional Weight Involved

The 4-in. concrete floor, applied as described, adds about 12,000 lb. to the weight of the car, but satisfactory experience with this first car floor has led to the equipment of a second car with a 3-in. floor which will increase the weight of the car by only about 9,000 lb. In six months' service, handling bag and bulk cement, the advantages of this car floor are said to have been thoroughly demonstrated. In unloading, for example, it is easier for the consignee to remove the cement either with power or with hand equipment. In other words, the car floor is smooth and resists abrasion to a marked degree. This feature is of particular advantage in hand trucking heavy material with steel-tire trucks. The strength of the floor was tested on one occasion in which the car got out of control and ran into a cut of cars at considerably more than normal switching speed, breaking a centerplate and dislodging one of the trucks. The floor of the car passed through this test without being in any way cracked or damaged so far as was noticeable. A table of estimated weights of various details entering into the construction of the Haydite concrete floor in this car is shown.



Details of the Application of the Haydite Concrete Floor to a Box Car

Additional advantages of the concrete floor are its insulating, fire-proof and non-slippery properties, and these qualities, coupled with high strength and resistance to abrasion, have caused the Universal Atlas Cement Company to suggest the use of this type of floor for box cars in limited service, refrigerators, stock cars and all open-top cars other than hoppers.



Interior View of Universal Cement Company Car Equipped with Haydite Light-Weight Concrete Floor

How Illinois Central Increased Average Car Load*

Methods employed in a ten-year campaign which saved over $4,000,000 last year

By G. E. Patterson

Vice-President, Illinois Central

ABOUT ten years ago we began a vigorous campaign to increase the average car load on our system. Let me cite a few concrete examples of the results realized in our campaign. Back in 1921 our average coal loading was 49.9 tons. Last year it was 53 tons, an increase of 3.1 tons. Applied to the total tonnage of coal loaded on our lines last year, this increase alone effected a saving of 23,630 cars. Again comparing our 1929 and 1921 average loadings, clay tile and pipe increased 3 tons, and sand, gravel, stone and clay increased 5.5 tons. Turning to loadings of agricultural commodities, wheat increased 1 ton, oats 1 ton, cotton seed 1.7 tons, cotton-seed products 3 tons and sugar 2.9 tons. For miscellaneous freight the increase was 3.9 tons.

Summarizing our carloadings as a whole, less-than-carload freight included, our average load per car in 1921 was 24.9 tons. Last year it was 27.7 tons, an increase of 2.8 tons, or a little more than 11 per cent. Our calculations indicate that, on the basis of 1929 operating costs, every ton of increase in the average load of cars means a yearly saving in out-of-pocket freight-train expenses of nearly $1,500,000. Therefore, the increase of 2.8 tons over 1921 average meant a saving to us last year of more than $4,000,000 in such expenses alone. In addition, substantial savings also accrued therefrom by reason of reductions in other items of operating expense, and in switching charges and reclaim allowances paid to other railroads. What these latter savings total cannot readily be calculated but they undoubtedly amount in the aggregate to a goodly sum.

A Job for the Entire Organization

The secret of success in bringing about heavier loading of cars, according to our experience, is in stimulating interest and activity to this end throughout the entire organization. This calls for constant attention to the subject on the part of supervising officers all along the line. Our objective on the Illinois Central is to have the matter of increasing the utilization of car capacity considered everybody's every-day job and followed up as such.

A striking illustration of the excellent results obtained in the development of this spirit among our forces is afforded by a letter from a yardmaster at one of our smaller terminals in the South which recently was passed on to me. It was a voluntary report to division officers listing by dates and car numbers some 50 specific instances of heavy loading of cars at his station during the month. The report itself—and, still more, the comments accompanying a good many of the listings indicated the writer's enthusiasm on the subject of increasing car loads and a real pride in the good showing made. We have reason to believe that this spirit prevails generally throughout our entire organization.

The practical application of the interest and enthusiasm of the organization in respect to heavier carloading takes several forms. First is the matter of furnishing the right kind of car for the job to be performed. For example, good carloading practice calls for furnishing cars with large tonnage capacity where shipments are to be made on a carload basis and cars of large cubical capacity for shipments of light, bulky commodities.

This feature comes in for careful attention on the Illinois Central. Station reports of cars loaded and received are carefully analyzed, and instances where shipments could have been handled in fewer cars are handled for improvement. We recently have been specializing on reducing the number of cars used to handle shipments from one consignor to one consignee where the movement amounts to four or more cars a month. Special reports of such movements are compiled by agents at loading or receiving points and forwarded to division headquarters, where they are scrutinized for opportunities to reduce the number of cars used. Such opportunities are followed up even in cases where either the consignor or the consignee is located at a point off our lines.

For example, there was a case recently where a large movement of cotton-seed meal from a point on our St. Louis division to a point off our lines could have been handled in fewer cars. Upon taking up the matter with the shipper, we were advised that there was no objection to loading cars more heavily provided the consignee was willing. We then communicated with the consignee, who at once signified his willingness to have the carloads increased, adding, "You may rest assured that it is our intention to have cotton-seed meal loaded as heavily as possible wherever it is practicable."

Improving Movements of Company Materials

Movements of company material afford many opportunities for effecting improvements in carloading. It is estimated that the railroads as a whole have a daily average of about 50,000 cars under load with company material, which is a good indication of the extent of these opportunities. We have found that much can be done to cut down the number of light-loaded cars used to handle company material by having material-consuming units of our organization anticipate and schedule their requirements so that shipments can be consoli-

* A paper presented before the eleventh annual session of the Transportation Division, American Railway Association, at Cleveland, Ohio, May 9, 1930.

dated. Loading small shipments of company material in local way-freight cars also enables us to do away with a good deal of light loading. Proper loading of such commodities as ties, lumber and bridge timber so as to utilize the full capacity of cars is another means of effecting substantial improvements in tonnages of company-material cars.

What in my opinion is the most important feature, however, in connection with heavy loading of company-material cars has to do with the loading specifications furnished to concerns from whom railway supplies are purchased. If these specifications call for shipments of less than car capacity, there is not only a breach of good car-loading practice but a grievous failure to set a good example. Heavy loading, like charity ought to begin at home, and the dealers might well inquire in such cases why we do not practice what we preach. On the Illinois Central we seek to avoid the chance of having this embarrassing question asked of us. We try our best to have shipping specifications on our purchases call for capacity carloads in every instance. Sometimes this involves a slight sacrifice of convenience or economy, but we feel that we ought to make the sacrifice for the sake of the example.

Success in bringing about heavier loading of revenue shipments depends mainly upon the extent to which the co-operation of buyers and shippers can be enlisted. Here is where the interest and enthusiasm of the railway organization count most heavily. Local representatives of the railroad usually know and oftentimes are well acquainted with the men who decide the size of shipping orders or of shipments. Moreover, they are familiar with conditions applying in individual cases and can discuss the matter of heavier loading in the light of this knowledge. Personal appeals from representatives thus qualified are often effective in having capacity carloads ordered or shipped. As an example in point, the Federal barge line recently was prevailed upon to increase the loading of sugar from 600 to 700 or more bags per car. Many similar examples of success along this line attained through personal appeals by our representatives could be cited.

Incidentally, this goes to illustrate one of the main reasons why we consider it better to leave the solicitation of heavier loading in the hands of local representatives instead of having a special organization for this purpose. We have a supervisor of weighing and inspection, with a staff of 4 clerical assistants and 14 inspectors, whose duties include special supervision over matters relating to heavier loading. Otherwise, these matters are handled entirely through our regular organization.

In appealing to buyers and shippers for full use of car capacity, our representatives point out to them that such use cuts down the demands upon the available car supply, thus helping us to fill orders for cars promptly and exactly. Other benefits to themselves from heavier car loading which shippers and receivers of freight are urged to consider include (1) savings in time, expense and track space by reason of eliminating the handling of unnecessary cars; (2) savings in the time required to transfer loading or unloading gangs from one car to another; (3) savings in accounting work by reason of fewer invoices, bills-of-lading and other documents and, in the case of shippers, (4) savings in the cost of lining, bracing and bulkheading incident to loading shipments. In not a few cases, however, it is found to be unnecessary even to mention any of these benefits. Those solicited for heavier loading almost invariably tell our representatives at once that they will be glad to co-operate in this way as a matter of friendly helpfulness to the railroad.

Contact with Subordinates in Charge of Loading Highly Important

Perhaps you will be interested to know in this connection that our experience indicates that establishing contact with the person directly in charge of ordering or loading shipments is one of the most effective means of bringing about heavier loading. Executive heads usually respond cordially to requests for heavier loading but sometimes lose sight of the matter through pressure of other claims upon their attention. Where the helpful interest of subordinates directly in charge of such matters is enlisted, however, the desired results are nearly always obtained. I might cite in illustration of this point the achievement of one of our superintendents whose division comprises an important coal-producing territory. By enlisting the co-operation of tipple foremen at the mines, he has been so successful in getting coal cars loaded to capacity that his chief difficulty now in respect to car tonnage is keeping down complaints of overloading.

Summarizing our experience on the Illinois Central, my opinion is that heavier loading of cars is primarily a matter of getting the enthusiastic co-operation of the railway organization. With this accomplished, the personal influence of members of the organization operates to bring about the co-operation of receivers and shippers of freight. Superintendents and other division officers, local agents and yardmasters are the key men in undertakings looking toward increased car loads.

I should be sadly remiss if I closed this presentation of Illinois Central activities in respect to heavier loading of cars without making grateful acknowledgment of our indebtedness and appreciation for the generous co-operation accorded us by Mr. Gormley and his organization. Just a short time ago, Mr. Gormley was good enough to lend us the assistance of Mr. Gass, one of his staff assistants. Accompanied by our supervisor of weighing and inspection, Mr. Gass made a trip over our entire system. In addition to affording much good counsel at conferences with division officers during the trip, Mr. Gass afterward prepared a memorandum embodying his observations and suggestions which has proved most helpful to us. We thought we knew a good deal about increasing the average car load, but I am frank to say that Mr. Gass showed us not a few things that could be done to effect further improvement. Among these was the system of special reports on shipments of four or more cars a month from one shipper to one consignee which I previously mentioned. In the light of the benefits we derived from his assistance, I take pleasure in recommending recourse to the services of Mr. Gormley's organization as a splendid aid to progress in obtaining heavier loading of cars.

INDUSTRIAL PENSION PLANS.—Of the numerous private pension plans now in force in American industries, not more than 500 are sufficiently comprehensive to deserve the dignity of being listed as industrial pension schemes; and, of the 500, few are on a sound financial basis and actuarially solvent. This is the estimate of W. J. Graham, vice-president of the Equitable Life Insurance Society, as expressed in a paper read recently before the International Congress of Actuaries at Stockholm, Sweden. Employers are beginning to realize that a responsible pension plan involves definite commitments for the future, and that provision should be made for the demands of such commitments. However, all forms of pension benefit, whether good, better or best, are useful educationally.

Freight Station Section Meets At Louisville

Amendment to 1930 tariff bill follows section's recommendation for handling import shipments in bond

THE conference report on the Hawley-Smoot Tariff bill which was passed recently by both houses of Congress and signed by the President contains an amendment having to do with the handling of import shipments in bond which was originally recommended by the Freight Station Section, American Railway Association, it was announced at the annual meeting of that organization at Louisville, Ky., on June 17, 18, 19 and 20. Formerly the government, in the case of import shipments consigned to an inland destination, simply furnished the carrier with a statement of the duties paid. The Treasury department regulations have now been amended to allow the railroad to have the custody of the original bill of lading, materially clarifying the handling of import shipments to the consignee in this country. This matter has been handled for the Section by a special committee—Docket No. 127, of which C. T. Spear, agent of the Chicago, St. Paul, Minneapolis & Omaha at St. Paul, Minn., is chairman.

G. R. Littell, agent, Baltimore & Ohio, Cleveland, Ohio, was elected chairman of the Section for the ensuing year. W. Merriman, agent, Southern Pacific, Oakland, Cal., was elected first vice-chairman and O. M. Hullinger, agent, Michigan Central, Chicago, was elected second vice-chairman, while R. O. Wells, agent, Illinois Central, Chicago, was reappointed secretary. The date and place of the 1931 meeting will be determined by the committee of direction. The Section elected F. A. Van Dusen, agent, Canadian Pacific, Detroit, Mich., A. E. Rankin, agent, Missouri-Kansas-Texas, Fort Worth, Tex., and H. W. Wike, agent, Northern Pacific, Minneapolis, Minn., as new members of the committee of direction.

Executive Officers on Speaking Program

D. F. Stevens, general superintendent of transportation of the Baltimore & Ohio, spoke on "The Man and His Job," stressing the advantages that are to be gained by the proper placing of men in the positions for which they are best suited. Starting with the necessity of training men in subjects that are pertinent to their work, Mr. Stevens touched upon the importance of educating men with respect to the purpose of their immediate work and the idea of instilling in them a sense of development of interests and improvement in work. He mentioned the aptitude for being in the place where the thing happens and knowing what to do when it occurs, the ability to keep an even temper, equitable dealing with men and vision as other factors that enable a man to get along in his job. Confidence in the concern for which one works, loyalty to his superior officers and those directly below him and humanitarianism, on the basis that all men are not perfect, were also discussed by Mr. Stevens.

Whitefoord R. Cole, president of the Louisville & Nashville, referred to inland waterway development as a project upon which the government has spent millions of dollars for the apparent intention of lowering railroad freight rates. Mr. Cole compared the Transportation Act of 1920 to the Federal Reserve Act, but said that it had not been as successful in removing political influence from the administration of the transportation system. Baiting the railroads is still a favorite sport, he said, blaming that activity for the present abundance of bills in Congress that make for confusion and uncertainty in the railroad business.

Included in the addresses was one by G. E. Patterson, vice-president in charge of operation of the Illinois Central. Mr. Patterson devoted his attention to the methods by which the station agent can aid his railway in the problems which they are now facing. He said in part:

> The railroads are confronted with a twofold problem. First, that of tiding ourselves over the effects of the present business situation, and, second, that represented by the tendency toward relatively diminished use of railway service. The answer is, by increased efficiency all along the line. Men in your positions can render valuable co-operation because no one else on the railroad has more to do with its efficiency and success than the station agent. Economical conduct of station business requires frequent reviews of the work and personnel with an eye to possibilities for further progress in the application of these principles. Reduction of loss and damage payments on shipments is an outstanding field for helpfulness by the station agent in the direction of increased economy and efficiency, and one which is especially within his province. Accomplishments in this field are exceptionally important, for the money that goes to settle loss and damage claims represents a dead loss.
>
> The station agent can do much to reduce these losses by making sure before accepting shipments that the freight complies with regulations in respect to packing or crating and marking, that it is adequately safeguarded against pilferage, is loaded in suitable cars, is properly stowed and braced to keep it safe in transit and is examined carefully at the time of delivery to consignees.
>
> Increased efficiency in the utilization of car capacity is another field wherein the station agent can accomplish much toward the elimination of unnecessary expense. On the Illinois Central every ton of increase effected in the average load per car means an annual saving to the railroad in out-of-pocket train expenses of approximately $1,500,000. This is in addition to substantial savings realized from reductions in other items of operating expense and from switching charges and reclaim allowances paid to other railroads, the amount of which cannot be accurately determined.
>
> The station agent can be immensely helpful toward increasing the average load of cars by furnishing the right kind of car for the job to be done and by enlisting the co-operation of shippers and consignees in having cars loaded more heavily. The benefits to themselves which can be held out to consignees and shippers as inducements for such action include (1) savings in time, expense and track space by reason of eliminating the handling of unnecessary cars, (2) savings in the time required to transfer warehouse gangs from one car to another, (3) savings in accounting work by reason of fewer invoices, bills of lading and other documents and, in the case of shippers, (4) savings in the cost of lining, bracing and bulkheading incident to loading shipments.
>
> Solicitation of business offers station agents an opportunity for beneficial co-operation of the first importance. His acquaintanceship in the community, and his knowledge of local affairs give him exceptional advantages for traffic solicitation,

and through the use of these advantages he can often obtain business that might otherwise be lost to the railroad. In fact, his zeal and ability in salesmanship sometimes count for more in getting traffic than all the other means of solicitation that can be used.

Overshadowing in importance all other factors that have to do with the success of the railroads is the cultivation and strengthening of public good will and friendship. It is stating the literal truth to say that the fate of the railroads is bound up in the state of public feeling toward them. They could not exist without public patronage. They are at the mercy of public sentiment in the matter of laws. Virtually every important detail of railway finance, administration and operation is subject to public supervision and control.

If the agent and his staff are unfailingly courteous and friendly, are diligent in striving to be accommodating and helpful to the public and manifest efficiency in giving patrons good service, the railroad is certain to win and keep friends who will stand by it with patronage and sympathetic influence. On the other hand, if there are shortcomings in any of these respects, the blame and discredit are passed on to the railroad, and the loss of friendship and prestige may cost it dearly. The most important thing an agent can do for the good of the railway industry and of his own livelihood is to conduct himself and his station in such a manner as to win the friendship and favorable esteem of his community. This is especially true in view of present conditions and tendencies entering into the railway situation.

The Committee Reports

The Committee on Station Accounting stated that every freight agent should have his attention called to the necessity of exerting every possible effort to bring about the use of modern methods in the handling of accounts and reports, and to lend every assistance toward the reduction in the number of present reports and their standardization.

The report of the Committee on Station Traffic endorsed the Rochester plan of filing delivery orders as being the most efficient and fastest method of reference. The delivery orders are originally made on cards, 4 in. by 6 in., suitable for filing which contains the following information:

Date—. Freight Agent,—R. R. Until further notice please deliver all freight consigned to....., to....., per..... Address.

These card orders, when properly filled in and signed by the consignee, are alphabetically arranged and filed in a steel cabinet equipped with drawer trays in which cards are fastened in such a manner as to leave the consignee's name visible so that information may be obtained almost instantaneously. This record is composed of the original order and it is not necessary to number, index or otherwise transcribe any data. There is practically no limit to the number of orders that may be accommodated by this system and it insures uniformity in wording and size of order cards. For stations where the volume of orders is not large, other forms of card indexes are suggested. Some forms now in use are quite elaborate and couch in legal phraseology various conditions bearing on the liability of carriers and guarantee of freight charges. The committee was advised by legal authority that these features are already covered by law and are not necessary as a part of the delivery order.

The Operating committee looked "with favor upon any mechanical device that will work directly with the many freight station problems because, as public servants, we must be equipped with the class of material that will assist in giving service to the shipping public." This committee also recommended the extensive use of bulletin boards at stations as a medium of accident prevention, posting bulletins which present a summary of accidents that have occurred and indicate the manner in which they could have been avoided. It was reported that much damage to commodities can be prevented and claims can be reduced by more careful selection of box car equipment for loading.

The Committee on Freight Claim Prevention urged that the provisions of Freight Claim Association Rule 64, requiring cars to be inspected before each loading be fully complied with to avoid loading cars with leaky roofs or sides with freight susceptible to damage by water, the evidence of inspection to be kept by the agent at loading point. Agents can be of assistance to the mechanical department by calling their attention to cars that have been unloaded and contents found in a damaged condition caused by leaks in roofs or sides. We believe the deluging of cars by hose far exceeds the requirements, and it is our thought that the classification of cars should be left to the mechanical department whose representatives use the best methods known to them for this purpose.

Topics Selected for Future Consideration

One of the topics presented for consideration in the ensuing year, and referred to the committee of direction for assignment to the proper committee, was that of over and under charge claims. It was thought that a campaign to obtain the proper description of goods by shipping clerks would also involve the employment of competent inspectors thoroughly versed in classification and experienced rate clerks. The carriers, the topic continued, with competent rate men everywhere, would probably make rate bureaus—other than those of the carriers—disappear.

A new topic is the subject of teletype billing. Freight loaded for a point 300 miles or less distant arrives at destination and is placed for unloading by the time or in some cases before waybills are received at destination by passenger train. It was suggested that the "Mani-Bill" could be used to greater advantage than at the present if teletype machines were installed in stations having a large amount of interchange billing that are located 500 miles or less apart and use the "Mani-Bill" form, reproducing a duplicate freight bill in the office of the receiving station simultaneously with the making of the original waybill in the forwarding office.

Other topics included The Container Car as an Element in Freight Claim Prevention and a Means of Meeting Motor Competition, Strapping and Sealing Packages Found to be in Bad Order Enroute or at Destination and a new topic, Motor Truck Competition, which includes a discussion of store-door delivery, container cars and the methods that the Freight Station Section can employ to aid the Motor Transport Division.

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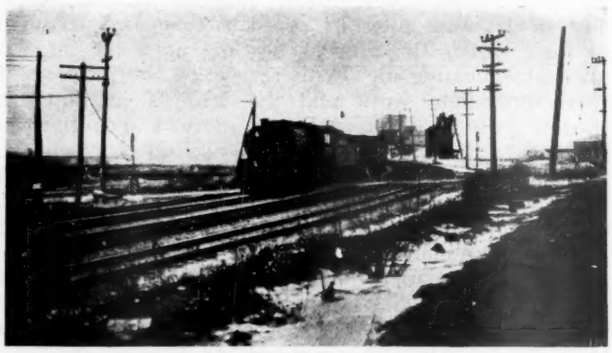


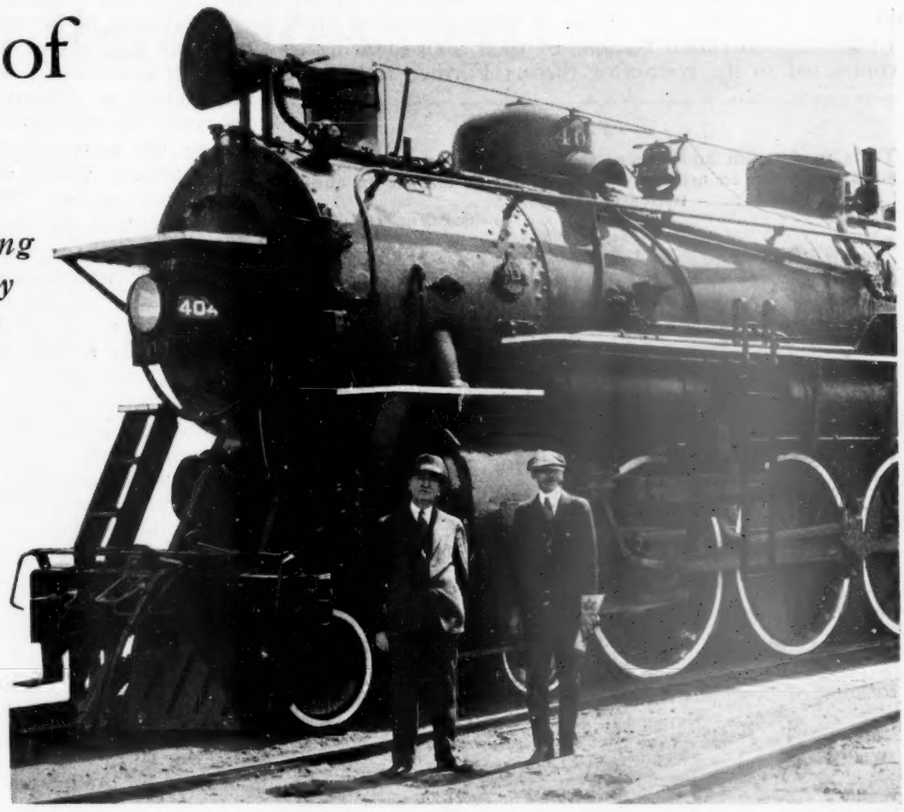
A Chicago Belt Line Transfer Train on the Indiana Harbor Belt at LaGrange, Ill.

Missouri-Kansas-Texas Tests Efficiency of Whistle

Increasing grade-crossing accidents inspire safety department to study warning device

By J. L. Walsh

Superintendent of Safety,
Dallas, Tex.



The Amplifier Is Located on the Front of the Locomotive

THE Safety department of the Missouri-Kansas-Texas is conducting a series of tests to determine the efficiency of the locomotive whistle in warning motorists at grade-crossings. The preliminary results indicate that considerable improvement can be made to render the present type whistle more effective and that mounting it in a suitable sound amplifier forward on the locomotive, will result in directing a greater volume of sound towards an approaching motorist and, at the same time, reduce the unpleasant disturbance to enginemen's ears and inhabitants along the right-of-way. Further tests of the whistles described herein are being conducted on locomotives operating in regular passenger service between Parsons, Kan. and San Antonio, Tex., so that the department may secure such opinions from employees and inhabitants along the route traveled as may assist in the selection of a standard whistle. These tests were inspired by the fact that an average of 4,000,000 automobiles are being added to the highways each year, while an average of 900 new crossings are being constructed in a corresponding period, and by the recognition of data showing that the so-called "chance taker" is not always wholly responsible for grade-crossing accidents. The safety department believes that the proper use of the locomotive whistle, which must necessarily serve as the potent means of alarming the motorist of a train's approach, can prevent a large number of needless collisions. The Missouri-Kansas-Texas has conducted an extensive program of instruction on the proper sounding of whistles which have produced remarkable results in lowering the number of grade-crossing accidents. With enginemen thus trained in sounding alarms correctly, the improvement of the whistle was felt to be the next logical step for additional progress.

The tests were applied to various types of whistles, located in different positions on the locomotive, and have been under way near Dallas, Tex., since March 31, 1930. A cone-shaped amplifier, 28 in. at the aperture, was cast of Lynite aluminum alloy, and tests were made of various whistles mounted at different angles within the amplifier, which was placed immediately forward of the stack as shown in the illustration. To begin the experiment an elimination test was conducted on the following six whistles:

6 pipes 2 in. in diameter, of lengths of 7 in., 9 in., 11 in., 13 in., 15 in. and 17 in. with vertical type valve.
6 pipes 2 in. in diameter, with lengths of 9 in., 11 in., 13 in., 15 in., 17 in. and 19 in. with vertical type valve.
Chime—3 chambers, 14 in. overall, made of brass, vertical type valve.
Chime—3 chambers, M-K-T standard.
Chime—3 chambers, M-K-T standard.
Chime—3 chambers, 12½ in., 15 in. and 18 in. with balanced valve.

This preliminary test, which resulted in the elimination of three types, was accomplished by placing each whistle on a locomotive, which was located on a turntable so that the locomotive could be made to face north, east, south and west. In each position a number of blasts of each whistle were sounded and the intensity of the sound was determined by sound experts of the Southwestern Bell Telephone Company who used an audiometer located at a distance of 1,000 feet from the center of the turntable. Duplicate effects were reported by observers in groups of three, placed 1,200 ft. both east and west from the turntable. These observers made reports as to the intensity and quality of the sound, that is, whether the tone was pleasing, startling or

harsh to the ear, when the whistles were placed in the standard position on the steam dome and on the front end with and without the sound amplifier.

Following these tests, the results of which are shown in Table I, whistles B, C and D were eliminated from further consideration because of their poor showing as contrasted to the remaining three. Further tests were

Table I

Tests made with audiometer with engine on turntable. Results are given in arbitrary sound units as shown on audiometer calibrations:

	Sound units using amplifier				Sound units without amplifier			
Whistle	South	East	North	West	South	East	North	West
A	6,000	9,000	5,000	5,000	5,000	7,000	5,000	4,000
B	2,500	3,500–4,000	2,000	1,500–2,000	3,500	4,000	3,500	3,000
C	3,000	5,000	2,000	2,000	5,000	5,000	5,000	4,000
D	3,500	6,000	3,000	3,000	5,500	5,500	5,000	3,000
E	5,000	7,000	5,000	4,000	5,000	5,000	5,000	3,500
F On dome	5,000	6,000	5,000	3,500–4,000				

then conducted on whistles A, E and F. These differed from the previous tests in that photographs of the sound waves emitted by the whistles, were made by means of the Westinghouse "Osiso" oscillograph located 245 ft. east of the center of the turntable. With this method it was possible to draw definite conclusions as to the advantage of placing the whistle forward in a suitable amplifier. Representative photographs of sound waves, as

Table II

Results of Audiometer Readings Secured from Running Tests—Engine Moving West

Whistle	1320 ft. from crossing	660 ft. from crossing	Time	Location of observer	
E with amplifier	6,000	12,000	10:28:00	150 ft. so. of crossing	Loco. speed 44 m.p.h. Air speed 60
E with amplifier	7,000	15,000	10:42:40	150 ft. so. of crossing	Loco. speed 53 m.p.h. Air speed 65
E without amplifier	6,000	7,000	1:37:00	500 ft. so. of crossing	Loco. speed 60 m.p.h. Air speed 75
E standard location	4,000	3,000	2:59:00	500 ft. so. of crossing	Loco. speed 60 m.p.h. Air speed 80
E standard location	5,000	10,000	6:30:00	500 ft. so. of crossing	Loco. speed 45 m.p.h. Air speed 70
F with amplifier	3,000	4,000	11:30:30	500 ft. so. of crossing	Loco. speed 55 m.p.h. Air speed 70
F without amplifier	4,000	6,000	1:57:30	500 ft. so. of crossing	Loco. speed 60 m.p.h. Air speed 75
F standard location	3,000	2,500	3:17:30	500 ft. so. of crossing	Loco. speed 60 m.p.h. Air speed 82
F standard location	4,000	3,000	3:43:00	500 ft. so. of crossing	
F standard location	4,000	3,000	5:01:45	500 ft. so. of crossing	Loco. speed 60 m.p.h. Air speed 82
F standard location	2,500	4,000	5:52:00	500 ft. no. of crossing	Loco. speed 45 m.p.h. Air speed 75
A with amplifier	5,000	6,000	11:23:00	500 ft. so. of crossing	Loco. speed 57 m.p.h. Air speed 69
A without amplifier	5,000	4,000	2:18:00	500 ft. so. of crossing	Loco. speed 60 m.p.h. Air speed 70
A standard location	3,000	5,000	5:39:00	500 ft. no. of crossing	Loco. speed 47 m.p.h. Air speed 72
Westbound Bluebonnet standard location	4,000	5,000	2:43:00	500 ft. so. of crossing	Loco. speed 35 m.p.h.
A standard location and E on front with amplifier	3,500 5,000	2,500 3,000		500 ft. so. of crossing	
Westbound Texas Special standard location	3,500	5,500	6:22:00	500 ft. no. of crossing	Loco. speed 35 m.p.h.

produced by the oscillograph, indicate the intensity of sound on the front, side and rear of the locomotive. Since the amplitude of the waves is directly proportional to the volume produced, the photographs clearly illustrate the increased volume of sound thrown forward by the amplifier, and the decreased sound thrown to the side and rear. Similar oscillograph photographs were made to illustrate the differences between the three different types of whistles.

In addition to the turntable tests, a comparison of the whistles in different locations was made under actual running conditions. A number of runs were made at high speed at a point where a representative grade-crossing was located at right angles to the track, and where the surrounding country was relatively free from objects which might reflect or absorb some of the sound waves. The locomotive approached from the east, while the oscillograph was located at a point 500 ft. down the highway from the crossing. The audiometer was located in a similar position on the opposite side of the crossing. Data were taken with each machine on each side of the crossing. Long blasts of the whistle under test were sounded at both 1,320 ft. and 600 ft. from the crossing and comparison was made by means of the audiometer. Photographs were made of the blasts at the 600 ft.-point with the oscillograph. Speed, wind velocity and weather conditions were noted and recorded. Tests were also made to determine the audibility of the whistle from the rear when equipped with an amplifier, to determine the possibility of signaling to a flagman at a distance of 3,000 ft. These tests proved conclusively that the various whistle signals could be clearly distinguished at this distance, although the tone was much softer. These tests were made only by ear, and all observers were unanimous in their opinion that such signals were entirely audible and that the sound waves reaching them were sufficient for the proper transmission of signals to a flagman at such a distance. Table 2 shows the results obtained by the audiometer in the running test.

From the figures shown in the table and the results reported by the observers, it is apparent that the volume of sound projected in front of the locomotive is greatly increased by the use of the sound amplifier, and that the amplifier has a marked directional effect in causing the sound to be thrown in great volume to the front and in reducing the volume to the rear and sides. Whistle F was found to perform poorly in the running tests, which might be accounted for by an improper valve action.

* * *

Handling Freight at the Delaware, Lackawanna & Western's New Terminal Warehouse at Jersey City, N. J.

The platform, on the south side of the warehouse, is at the second floor level, and is served by a three-track viaduct. The Lansing trailers shown in the picture are a few of the 300 made to order on the railroad's specifications.

Eastern and Western Class Rates Revised

Readjustments prescribed by I. C. C. on mileage basis intended to increase western revenues

WASHINGTON, D. C.

THE Interstate Commerce Commission on July 8 made public its decisions in the cases involving proposed readjustments of class rates in eastern and western trunk line territories as well as those applying inter-territorially, both of which have been before it for over five years, prescribing general revisions of class rates on the basis of mileage scales. In the western case, which involved petitions of the roads for an adjustment of rates which would increase their revenues, the commission estimates roughly that the rates it has approved, if applied intraterritorially and interterritorially, interstate and intrastate, will increase the revenues of the western trunk line carriers by ten or twelve million dollars annually, in addition to affording a comprehensive and harmonious readjustment.

The eastern case was not primarily a revenue case, although the question of whether or not the carriers were entitled to greater revenues from class traffic was one of the principal controverted points throughout the proceedings. The report of the commission says that "the new system of class rates in official territory should clearly not yield less than the present aggregate revenues from this traffic" and that "on the contrary, there is ground for the view that class-rate traffic in this territory, particularly that belonging to the higher classes, may well pay higher rates than those now in effect," but no estimate is attempted as to the aggregate effect.

Both cases were handled largely from the standpoint of the need for a revision of the rate structures themselves and the increase estimated to result from the western rates is far less than that declared necessary by the railroads.

The commission finds that the carriers in the western group are not earning a fair return, and that the carriers as a whole in w.t.l. territory are in poor financial condition, and it says that the increases authorized will not augment the earnings sufficiently to produce a fair return upon the carriers' property in the western group as a whole, but it also says there is a limit to the maximum reasonableness of class rates if traffic thereunder is to move freely. "It is the purpose here," the report says, "to prescribe scales of class rates that will, on the whole, increase respondents' revenues so as to more nearly yield a fair return on their property."

With the issuance of these reports the commission has now reviewed and prescribed the class-rate structures within the several major rate territories, comprising all of the United States lying east of the Rocky mountains, as well as most of the class rates between these territories, extensive class-rate adjustments having been prescribed previously in the Southern case and the Southwestern cases.

The western case was handled as Part 2 of the general rate structure investigation undertaken by the commission under the Hoch-Smith resolution, and the bearing of the resolution on the rate structure generally was also an important consideration on the disposition of the eastern case. No dissents were registered by any of the commissioners as to the eastern case. In the western case Commissioner Woodlock, concurring in what has been done so far as it goes, expressed some doubt as to whether the commission has prescribed a level of reasonable maximum rates and pointed out that if the intrastate rates are not brought into a reasonably close accordance with the interstate rates the main purpose of the case will be nullified. Commissioner Brainerd concurred in part and Commissioner Porter dissented, objecting to some of the relations established.

Both reports are voluminous, that by Chairman McManamy, in the western case including 235 printed pages in addition to appendices, and 20 findings, while the eastern report, by Commissioner Eastman, includes 146 pages and 19 separate findings. Brief summaries of the findings also were made public.

Western Trunk Line Case

The rates in issue in the w.t.l. case, generally speaking, are those on class-rate traffic between points within w.t.l. territory and between points in that territory and points in the entire country east of the Mississippi river and Lake Michigan. W.t.l. territory may be roughly described as extending west from Lake Michigan and the Mississippi river to the Rocky Mountains and north from and including Kansas and northern Missouri to the Canadian border. Class rates over lake-rail routes between w.t.l. and eastern territories are included.

For many years the w.t.l. class-rate structure has been the cause of widespread dissatisfaction and a prolific source of complaints. As early as June, 1923, the railroads contemplated a general revision of these rates. Late in 1925 during the course of the hearings in *Revenues in the Western District*, they filed a petition praying for a complete revision of the w.t.l. class rates in order to secure not only a harmonious rate basis but to obtain additional revenues. A considerable period elapsed during which shippers and railroads attempted to reach an agreement upon a mutually satisfactory basis by conference, but without success. The current general rate investigation, No. 17,000, to the extent that it involved the issues outlined was thereupon set for hearing together with the railroads' petition and numerous complaints and investigations pending before the commission involving class rates within or to or from w.t.l. territory. Hearings began in January, 1927, and continued with varying intervals until May, 1928. The proposed report of the examiners was served on August 7, 1929. A week of oral argument was had in October, 1929.

The railroads filed similar petitions covering the intrastate rates with the state commissions of the w.t.l.

states, and the proceedings have been handled on a co-operative plan throughout.

In the decision now released, w.t.l. territory, exclusive of designated parts of eastern and southeastern Wisconsin, is divided into three zones for rate-making purposes. The lowest rated zone, designated Zone I, includes roughly the area east of the Missouri river and the Sioux Falls-Twin Cities-Duluth line and west and north of the Mississippi river and a line extending through Dodgeville, Madison, Watertown, and Green Bay, Wis. The intermediate rated zone lies west of Zone I and comprises the portion of Kansas included in Kansas-Missouri scale territory in the *Consolidated Southwestern Cases,* and the portions of Nebraska, South Dakota, North Dakota and Minnesota, on and east of a line drawn through Superior, Kearney, Long Pine, Nebr., Winner, Chamberlain, Wolsey, and Aberdeen, S. Dak., and Oakes, New Rockford, Leeds, and Bisbee, N. Dak. The highest-rated zone, Zone III lies west thereof.

Scales

For application between points in Zone III, a scale is prescribed which approximates in general level the scale prescribed for Oklahoma and other southwestern States in *Consolidated Southwestern Cases* but with a somewhat more constant rate of progression. The rates in Scales I and II prescribed for application within Zones I and II are about 83 and 93 per cent respectively of the Scale III rates. The measure and progression of the scales are briefly indicated by the following first class rates:

Miles	Scale I Cents	Scale II Cents	Scale III Cents
5	32	34	36
100	68	76	82
200	92	104	112
300	110	123	132
400	126	141	152
700	174	195	210
800	186	209	225
1500	279	302	325

The basis prescribed for determining rates between points in different zones is to apply the lower or lowest scale for the entire distance plus differentials for the distance or distances in the higher rated zone or zones.

Between the w.t.l. rate zones and that portion of official territory embracing Ohio, the southeastern corner of Michigan and east thereof, specific key rates between selected points of origin and destination are prescribed which, with appropriate grouping in the manner indicated, will provide reasonable interterritorial rates between these areas. Between the w.t.l. zones, and official and Illinois territories west of the area from and to which key rates are prescribed, the plan for constructing rates is similar to that employed between the zones in w.t.l. territory. A basic scale approximating 70 per cent of the Scale III rates is to be applied for the entire distance, plus a differential or differentials for the hauls in w.t.l. territory. The key rates described above are based on distance, but other relevant conditions have been given consideration. They do not purport to be precisely on the distance plan for determining interterritorial rates for shorter hauls. For the portion of Wisconsin now included in Illinois territory and for a narrow strip of that state lying north of Illinois territory and on and east of a line from Watertown to Green Bay and between these portions of Wisconsin and official territory and the remainder of Illinois territory the bases fixed are the same as those prescribed in the *Eastern Class Rate Case,* for corresponding sections of Illinois and Michigan.

It is found that the record is inadequate upon which to prescribe joint lake-rail rates between w.t.l. and official territories. However, a related and harmonious adjustment of joint lake-rail rates between these territories is found necessary. Rail and lake lines are required to establish a complete structure of such rates not later than the opening of navigation on the Great Lakes in 1931, governed in a general way by the basis prescribed for interterritorial all-rail rates.

The record is also found inadequate to determine the general basis of class rates between w.t.l. and southern territories. The railroads will be expected to adjust rates between the south and southern Wisconsin, the Twin Cities and other w.t.l. points entitled to similar treatment with relation to rates fixed in the *Southern Class Rate Case.*

Distances are to be computed over the shortest routes over which carload traffic can be transported without change of lading.

The western classification will govern the interterritorial rates to and from points within the w.t.l. rate zones. The percentage relations of both intraterritorial and interterritorial rates governed by western classification will be the same on the existing classes as those prescribed in *Consolidated Southwestern Cases,* except that the relation of fifth class to first class will be 37.5 per cent. It is further provided that in publishing tariffs in conformity with the findings, the railroads shall include 13 additional scales of rates bearing stated relations to the first class rates prescribed. Official classification will govern the rates prescribed within the eastern and southeastern portions of Wisconsin above described, and between these portions of Wisconsin and Illinois and official territories.

Large groupings of points in w.t.l. territory based on commercial reasons are disapproved. Grouping is provided in connection with the key rates prescribed; and a limited grouping, somewhat liberalized for longer hauls, is permitted in connection with rates based on the distance formula.

The full measure of the increased class rates is not to be applied on certain commodities including agricultural implements, dairy products, canned goods and iron and steel articles, but they are accorded rates based on certain percentages of first class lower than would result by application of the full class bases. No increases are permitted in these proceedings on certain agricultural products such as hay, and wool in the grease, without prejudice to the modification of the rates thereon by usual methods and independently of these proceedings.

No Finding As to State Rates

As these proceedings were heard cooperatively with the state commissions, no finding is made with respect to the intrastate rates at this time, other than those in Kansas, in order that the state commissions may pursue the course under the law of their respective states. The Kansas intrastate situation is treated in a separate report on complaints filed and heard subsequent to the close of hearings in the present proceedings.

In order to permit of more elasticity in minor matters in publishing the rates required by the report, no general order is or will be entered pending advice from the railroads whether the findings will be complied with without order. In the event no order is entered, November 1, 1930, is fixed as the effective date of the tariffs containing all the new schedules.

"The two primary and outstanding matters presented for consideration, namely, (1) a comprehensive and harmonious readjustment of the class rates within w.t.l.

territory and between that and official territory; and (2) increases in the revenues of the w.t.l. railroads, will result from the commission's findings," the commission press notice said. "However, some rate reductions will follow in w.t.l. territory, especially for the longer hauls; and many reductions in rates to and from official territory. The measure of increase is substantially greater in w.t.l. Zone I than in the other zones. The bases prescribed are designed with relation to adjustments in adjoining territories. While it is impossible accurately to determine the revenue effect of the entire new rate adjustment, it is roughly estimated that if applied intraterritorially and interterritorially,. interstate and intrastate, the w.t.l. railroads' revenues will be increased by ten or twelve million dollars. It is believed that the financial condition of those railroads warrants such increase."

The commission finds that the general level of class rates in w.t.l. territory is "relatively low" and that the roads are entitled to the increased revenues expected to be yielded by the rates found justified, both because of their financial condition and because the class-rate traffic can reasonably bear such rates. The economic condition of the agricultural industry in the territory is found to have considerably improved, but the report says that agriculture has not fully recovered from post-war depression while other industries are generally in a better condition. For this reason no increases are permitted on certain ordinary agricultural products. Some extracts from the general findings and conclusions of the report follow:

In *Ex parte 87* it was found that no financial emergency existed with respect to the major portion of the western district, and the carriers were denied authority to increase freight rates in that district as a whole. Many inequalities in the rate structures maintained in parts of the western district were said to need correction. It was declared that "the least favorable conditions in the district, so far as carrier revenues are concerned, appear to exist in western trunk-line territory," 113 I. C. C. 37; and that declaration is amply borne out by the record in these proceedings. The relatively low class rates in w.t.l. territory, as compared with other rate territories in the western district, contribute in a measure to that situation. This is especially true of the interstate and intrastate class rates in the section east of the Missouri River. Carriers in the western group, as distinguished from the western district, are not earning a fair return. That group comprises w. t. l. and southwestern rate territories.

The carriers as a whole in w.t.l. territory are in poor financial condition. Their condition is not due to inefficient or uneconomical operation of these railroad properties, except possibly as to certain passenger operations; nor, so far as volume of traffic is concerned, to a prolongation of the business depression of 1921. For the 11 systems designated by respondents as Group I, which have more than 92 per cent of their aggregate mileage in w. t. l. territory, the following table indicates that after the volume of traffic slumped to 34.2 billion revenue ton-miles in 1921 it rebounded in 1923 to 44.8 billion; and that since 1923 the traffic volume has remained practically constant at a figure approaching that of 1920, a peak year in traffic volume.

Figures introduced by both respondents and the state commissions for 1925, 1926, and 1927, although obtained by the use of different bases, indicate that the operations of the railway mileage lying within w. t. l. territory are not yielding a fair return on the value of property held for and used in the service of transportation. For Group I systems respondents' lowest estimated return was 2.97 per cent, which resulted from 1927 operations, and the highest estimate made by a witness for the state commissions was 3.73 per cent, based on the operations of 1926, which was a peak year.

There may be a divergence of opinion as to the amount of additional revenues to which these respondents are reasonably entitled. It may be observed that w. t. l. territory does not compose a group for computing a fair rate of return on carriers' property therein within the meaning of the act. It is clear that the revenues obtainable from the increases in class rates herein authorized will not augment the earning sufficiently to produce a fair return upon the carriers' property in the western group as a whole. There is a limit to the maximum reasonableness of class rates if traffic thereunder is to move freely. Class-rate traffic is of such a nature that it may well be expected to sustain rates relatively higher than other business, giving due regard to the rate levels in adjoining territories and to what the traffic will bear.

A number of parties strongly contended that merely bringing up present intrastate rates to the level of interstate rates would yield all the additional revenues to which w. t. l. respondents may be entitled. If the total revenues received from intrastate class-rate traffic during the six days covered by the 1926 traffic test be assumed representative of a week's business, and multiplied by 52 in order to ascertain an indication of annual revenues, the product would be approximately $24,500,000. An increase averaging about 10 per cent throughout w. t. l. territory, which of course would mean a considerably higher percentage in some States in the eastern half of the territory, would probably bring up the intrastate rates to the level of the interstate rates; but that would yield only about $2,450,000 per year, or a sum wholly inadequate for respondents' additional revenue needs, especially in view of the reductions required in the interterritorial combination rates.

An estimate based on the 1926 traffic test indicates that the maximum increase in revenues which could be expected within w. t. l. territory, if respondents' proposals with respect to that territory were accepted in their entirety, would be in the neighborhood of $24,000,000 Although the scales of distance rates herein prescribed will yield a material increase in revenues, the increase will fall far short of that amount. This is true not alone because those scales are lower than those proposed by respondents, but also because of the formula provided for the computation of distances; because joint rates would supplant present combinations within and to and from w. t. l. territory; and because rates lower than the class basis are prescribed on certain articles.

Any future general improvement in the financial condition of w. t. l. respondents, with a substantial increase in the average rate of return on their property investment, is no valid reason for denying them increases on their class-rate traffic. The rates prescribed herein are intended to be sufficiently high to yield a relatively greater amount of profit than class-rate traffic now contributes to the revenues of w. t. l. respondents.

While some consideration has been given to motor-truck competition in the scales herein prescribed, it is not within our province or power or in the interest of the public, to fix rail rates unduly low for short hauls largely for the purpose of eliminating that competition. Under present conditions, motor-truck competition is primarily the railroad's problem, and they apparently so regard it.

Much has been said on this record in favor of making class-rate scales based on cost plus a reasonable profit. Some parties introduced studies purporting to show the cost of handling class-rate traffic, but none is convincing that true costs have been determined. Furthermore, even if the costs had been satisfactorily ascertained, it is clear that rates on class-rate traffic can not be made solely on a cost basis, because, considering that traffic alone, it must yield more than the fair return fixed for all traffic.

The theory of cost plus reasonable profit on class-rate traffic presupposes that all other traffic also bears cost plus a reasonable profit required to yield a fair return; but such a theory runs counter to what is declared by the Hoch-Smith resolution to be "the true policy in rate making to be pursued," namely, that freight rates shall be adjusted with consideration to the conditions which at any time prevail in the industries, so far as it is legally possible to do, to the end that commodities may freely move. Some traffic must bear relatively higher freight charges if any weight is to be given to the conditions prevailing in the respective industries. It is the purpose here to prescribe scales of class rates that will, on the whole, increase respondent's revenues so as to more nearly yield a fair return on their property.

Representatives of the state commissions contend that respondents in w. t. l. territory have not exercised due diligence in putting the passenger operations on a more favorable basis; but, on the contrary, they have materially extended their passenger-train service.

The fact must be recognized that the public demands adequate and comfortable means of travel, and at reasonable charges, regardless of what the results of passenger service contribute to the return on investment. We are satisfied, however, that in the past there has been some unnecessary

passenger-train service, and methods should be adopted to put the passenger business, so far as practicable, on a profitable basis.

Eastern Class Rate Case

The eastern case is a general investigation of interstate class rates in official classification territory, instituted May 13, 1924, upon petition of a joint committee representing both carriers and shippers. "The fundamental general question presented," the report says, "is not so much whether any changes should be made in the present class-rate structure but rather the exact nature of those changes and how extensive they should be." The shippers contended that the commission could not lawfully in this proceeding authorize changes in class rates which would result in a substantial increase in carriers' revenues. The report points out, however, that in its preliminary announcement of the proceeding the commission said that it would not be the primary purpose either to add to or subtract from the aggregate revenues of the carriers but that "this does not mean, necessarily, that proposed rates will be rejected upon the ground that they increase or decrease aggregate revenues." As to the general revenue effect the report says in part:

The revenue test of the examiner's recommendations indicated that, if followed, they might result in increased revenues for the carriers in official territory ranging from $40,000,000 as a minimum estimate to $60,000,000 as a maximum. These amounts were about 10 and 15 per cent, respectively, of the carriers' total revenues from class-rate traffic in the same year; about 1.8 and 2.7 per cent, respectively, of their total freight revenue; and about 1.3 and 1.9 per cent of their total operating revenue. The point is made by the shippers that the earnings of the carriers in the eastern group in recent years, particularly in 1928 and the first eight months of 1929, have been so favorable that an increase in revenues such as was recommended in the proposed report is not needed and should not be sanctioned.

Effect of Section 15a

The Rubber Manufacturers' Association carries this latter argument to the extent of contending that such an increase would be unlawful, because it would raise the net revenues of the eastern carriers above the average fair return provided for by section 15a of the interstate commerce act.

The theory, which was explicitly stated, is that if the carriers in any of the groups which we have recognized under section 15a are earning more than the fair return, we are estopped by that fact from permitting an increase in the rates on any substantial volume of traffic. Contrariwise, if the carriers are earning less than the fair return, we are estopped from requiring a reduction in such rates. In our opinion this theory is erroneous. It is quite true that section 15a (2) directs us, in the exercise of our "power to prescribe just and reasonable rates," to "initiate, modify, establish, or adjust such rates" so that the carriers in any group which we designate will "earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers." But it will be noted that this direction is to be carried out in the exercise of our power "to prescribe just and reasonable rates." It does not change the duty imposed upon carriers by section 1, or make rates reasonable which would otherwise be unreasonable. Certainly if we find that rates are unreasonably high or unreasonably low, it is our duty to correct them, whether or not such rates relate to a substantial or an unsubstantial volume of traffic, and whether or not the earnings of the carriers are high or low. Section 15a does not affect that duty but is superimposed upon it. If the result of such a correction of rates is to raise the earnings of the carriers above, or to depress them below, the stipulated return, it becomes our further duty, under section 15a, to adjust the earnings, "as nearly as may be," to the proper level by other changes in rates. But the theory advanced by the association would devitalize section 1 in a manner which surely was never intended by Congress and which can not be assumed or implied from the language used in section 15a.

Moreover, the factual premise upon which the association's argument rests is itself uncertain. Whether or not the "fair value" used in its computations is correct may at least be questioned, in view of the decision of the Supreme Court in *St. L. & O'Fallon R. Co. v. U. S.*, 279 U. S. 451. But assuming its accuracy, there is no assurance that even such a change in class rates as the examiner recommended would result in aggregate earnings in excess of the stipulated return. Railroad earnings in 1928 and 1929 were considerably higher than the average for the period from 1920 to 1929. There is no present reason to believe that they will reach an equally high level in the immediate future. Furthermore, the association's argument assumes that rate levels on other kinds of traffic will be static.

Respondents point out that since the investigation was instituted their revenues have been lowered through reduced rates on fresh meats, commercial fertilizer, livestock, grapes, peaches, cement, deciduous fruits from the West, and other commodities. Within the past three years new systems of class rates between official territory on the one hand and southern and southwestern territories on the other hand have gone into effect, involving the establishment of joint rates in many instances where rates had previously been made by combination of rates to and from Mississippi and Ohio River crossings. Contemporaneously we are now similarly prescribing a new system of class rates between official territory and western trunk-line territory. As the eastern lines have not agreed with their western and southern connections as to the basis of dividing the new interterritorial rates, it is impossible to predict definitely what final effects these rates will have on respondents' revenues, but inasmuch as the rates as a whole are lower than those formerly made on combination, it is at least probable that respondents' earnings will be adversely affected by these changes.

Five days prior to the opening of the hearings in the instant investigation the Hoch-Smith resolution was approved, directing us to make a thorough investigation of the rate structure of the country with a view to making such changes, adjustments, and redistribution of rates and charges as may be found necessary to correct any defects so found to exist. Under the mandate of that resolution we have found that there should be an increase and readjustment of the class rates in western trunk-line territory, but the shippers in that territory opposing such an increase have contended that it would create an unfair disparity between the class rates in that territory and those in effect just across the territorial border in official territory. This circumstance affords another reason why the instant case can not properly be decided from the narrow standpoint of conditions in the eastern district alone as they were in 1925. In our preliminary notice we particularly called attention to the relation between the rates here involved and those in other territories.

Class rates in official territory differ materially from those in other sections of the country. They are much lower in level, with the exception of certain rates in western trunk-line territory which approach them in level. They also apply, generally speaking, to a much wider range of traffic. In the other territories class rates, at least in the past, appear to have been of particular interest to jobbers, and the traffic which they move seems to have been, and perhaps still is, predominantly less than carload. For carload traffic of any important volume commodity rates have generally been provided. This is not the situation in official territory, where a great deal of very important carload traffic moves on class rates. Of the traffic embraced by the revenue test about 68 per cent was carload.

Effect on Revenues

The new system of class rates in official territory should clearly not yield less than the present aggregate revenues from this traffic. On the contrary, there is ground for the view that class-rate traffic in this territory, particularly that belonging to the higher classes, may well pay higher rates than those now in effect. This view is held by many authorities on transportation economics, who believe that freight charges are of far less relative importance in the case of high-grade manufactured commodities than they are in the case of low-grade raw materials, and it seems to have been at least in part responsible for the enactment of the Hoch-Smith resolution.

It is clear that any distance scale for application between central and trunk-line territories which would at least preserve present revenues from interterritorial traffic must be higher than the present central scale, if for no other reason than the drastic reductions on the class most important from the standpoint of revenue, fifth class which would result from use of the latter scale extended.

The report in the eastern case prescribes a basic distance

scale of class rates for use in official territory, except as otherwise provided. The progression and level of the scale are briefly indicated in the following first-class rates:

Miles	Cents
5	30
75	51
100	56
150	66
240	79
300	87
400	99
500	111
600	123
700	135
800	145

Below first class 22 other rate columns are provided fixed at percentages of first class ranging from 92.5 to 13. The principal present classes are given the following percentages: second, 85; Rule 25 and third 70; Rule 26, 55; fourth, 50; fifth, 35; sixth, 27.5.

Between points in zone C in Michigan, zone B in New England, certain branch lines of the New York Central and Delaware & Hudson in northern New York, and certain branch lines in Virginia, West Virginia, and Kentucky on the one hand and other points in the territory a level higher than the basic scale is prescribed. To and from certain lines of the Chesapeake & Ohio, Norfolk & Western, and Virginian a still higher basis is prescribed. Within zone A in New England a scale 5 per cent higher than the basic scale will apply, and within zone B New England a scale 10 per cent higher than that for zone A.

For application between central territory on the one hand and trunk-line territory and New England on the other hand, and to a limited extent between trunk-line territory and New England a large number of specified key rates between the more important points are prescribed. These rates are based on distance to a considerable extent but also take into account certain other elements. They do not reflect the present McGraham percentages or the so-called port differentials. Some of the more important of these key rates (first class) are shown below:

Between and	New York	Boston	Philadelphia	Baltimore	Norfolk
Chicago	152	154	145	140	151
St. Louis	167	175	160	153	160
Detroit	123	130	123	120	139
Cleveland	116	122	107	102	123
Cincinnati	136	148	127	116	127

Rates under the distance scales are required to be based on the shortest routes over which carload traffic can be moved without transfer of lading. With slight modifications the report approves the grouping and basis of rates proposed by the carriers for New York City, Philadelphia, and Baltimore. The report provides for grouping Jersey City, N. J., and certain other places in its vicinity with New York City under rates to and from New England.

The report prescribes rail-lake rates between Lake Michigan ports and eastern territory 90 per cent of the corresponding all-rail rates subject to a maximum difference of 16 cents on first class. Between Baltimore and the Del-Mar-Va peninsula rail-water rates via Love Point, Md., are required to be based on actual distances over such routes.

Increased rates on fresh domestic fruits and vegetables, hay, and dairy products are not authorized by the report. Maximum reasonable rates only are prescribed.

THE NORTH WESTERN RAILWAY OF INDIA plans to spend about 6,800,000 rupees ($2,448,000) on new construction during 1930, according to reports from the Department of Commerce. Most of the work consists of new line of 5 ft. 6 in. gage. The Burma Railways will spend about 5,800,000 rupees ($2,088,000) on the construction of about 100 miles of new line (39 in. gage) and the erection of a new bridge across the Irrawaddy river at Sagaing.

ALLAN HOOVER, younger son of President Hoover, was a member of the combined party of students from the Harvard Graduate School of Business Administration and Yale University which inspected the New York, New Haven & Hartford yards at Cedar Hill, Conn., on April 26. This inspection trip by transportation students at the two universities is conducted annually by Professors W. J. Cunningham and W. M. Daniels and J. A. Droege, vice-president of the New Haven.

Fourth Section Relief Proposed for S. P. Lines

WASHINGTON, D. C.

EXAMINER W. A. Disque of the Interstate Commerce Commission has recommended in a proposed report that the commission authorize the Southern Pacific and its steamship lines to adjust their rates so as to be able to compete for some of the traffic now being handled by water lines through the Panama canal, by granting fourth section relief on substantially all carload traffic of the kind carried by the steamship lines between New York and Baltimore piers and California points via the Sunset-Gulf ocean-and-rail route through Galveston or Houston, Tex. Such authority would enable the lines to put into effect proposed rates many of which are less than half of the present rates without reducing the rates to intermediate points.

"The great bulk of the traffic under consideration should continue to move via the canal," the proposed report says, "but the applicants are entitled to compete for a portion of it and may adjust their rates accordingly. To that end the proposed rates are worthy of a trial. The application, as modified at the hearing, and with the supplemental authority sought to meet, within limits, possible reductions by the canal lines, is granted. However, if the rates authorized result in the diversion of an unduly heavy tonnage,—perhaps more than a couple of hundred thousand tons per year,—from the canal lines, some revision may have to be made. The case will accordingly be held open for possible further action after the new rates have been in effect for a reasonable period. It should be made clear that it is not necessarily our purpose to authorize rates for the applicants that will be substantially equal all things considered, to those of the canal lines, which is the theory of the proposal. Such rates might attract too much traffic.

"This should not be understood to mean that it is the function of this commission to divide or apportion traffic between rivals, but one adjustment of the applicants' rates might be in the public interest and another not. Experience alone can demonstrate what will constitute a reasonable differential basis for the applicants' rates. The applicants and the canal lines will have to learn to live together and work in harmony. The transcontinental all-rail lines should not see in this decision any particular encouragement for the filing of new applications."

While this case was pending before the commission an effort was made to prevent the commission from acting by legislation, and a sub-committee of the Senate committee on interstate commerce held a series of hearings on a bill introduced by Senator Pittman to prohibit fourth section relief on traffic that could be handled by the canal lines, but no action was taken on the bill and no report by the sub-committee was made public.

The Southern Pacific lines had proposed reduced rates on about 820 commodities westbound and about 200 eastbound, made by adding 10 per cent to what the applicants understood to be the generally-used intercoastal steamship conference rate applicable to and from the ports locally, and then adding certain amounts to approximately represent marine insurance, California state toll and any other incidental expenses which are entailed in shipping through the canal. They also asked general authority to continue the proposed 10 per cent

differential in favor of the canal lines in case the canal lines rates are changed, without coming to the commission in each instance where a reduction was desired, saying that this authority would constitute an effective deterrent to reductions on the part of the canal lines.

Morgan Line Needs Traffic

Examiner Disque's report says that the Morgan Line is particularly in need of additional traffic to permit of more efficient operation and justify continued service and that the movement of transcontinental traffic over the Sunset-Gulf route for several years past has been sporadic and almost negligible, due to the fact that the canal lines have been taking practically all the traffic. The traffic involved is said to average probably 1,500,000 tons per year. The additional traffic which the proposed rates are designed to attract could be handled at much less expense per unit than that already moving and the Southern Pacific's ships are loaded to only about 70 per cent of their carrying capacity, while several are generally lying idle.

Canal Line Traffic Increasing

The business of the canal lines has increased by substantial proportions every year during the past decade, Mr. Disque said. For several years following the war it was negligible, but in 1927 the westbound traffic alone amounted to over 2,725,000 long tons, while the eastbound traffic exceeded 8,000,000 tons. It should be said, however that these figures include traffic moving to and from south Atlantic and Gulf ports as well as north Atlantic ports; also that about half of the eastbound tonnage was petroleum and a large part of the balance lumber, neither of which commodities is embraced by the eastbound application. In 1927 the total eastbound and westbound traffic, exclusive of petroleum and lumber, between New York and Baltimore, on the one hand, and California, on the other, amounted to 1,900,000 net tons, the same as in 1923, and only slightly more than in the intervening years. The traffic involved averages probably 1,500,000 tons per year. All of it does not originate or terminate at the ports. On the eastern end a very large portion of it has origin or destination at interior points in the north Atlantic and Central states, and a considerable portion in North Carolina, Virginia and the Middle West. On the western end most of it has origin or destination at or near the California ports. Local rail rates apply for the inland hauls.

There are between 35 and 40 canal lines competing for intercoastal business. They operate from one to 28 ships each. As a group they reach all the ports embraced by the applications and nearly every one of them serves the most important ports. In 1927, for example, they operated about 200 ships, which made 517 westbound and 297 eastbound passages through the canal. The eastbound passages are fewer because the traffic is not well balanced; when a ship arrives from an Atlantic port it is often not reloaded at a California port, but has to go to Oregon, Washington, or some foreign country for a return cargo. The ships are generally operated with a large amount of unused capacity. In addition to the regular lines there are some tramp steamers.

The proposed 10 per cent differential is calculated roughly to represent such advantages as the Sunset-Gulf route affords, as offset by certain advantages offered by the canal lines. In other words, the proposed rates are intended to put the applicants on an equal footing with the conference lines in the solicitation of business and to be no more than necessary to meet the competitive situation. Sunset-Gulf service contemplates delivery at port destinations in from 2 to 3 weeks, depending upon the points of origin and destination, whether or not prompt connection is made with the steamer at Galveston or Houston, and various other conditions. The conference lines generally make delivery in from 2.5 to 4 weeks, depending mainly upon the points of origin and destination and the speed of the ship. Their slower service is to an extent offset by the fact that they have sailings from New York nearly every day and several per week from other important north Atlantic ports, while the applicant has generally but two from New York and only one a month from Baltimore. The wide range of available ports offered by the conference lines is of great value to interior eastern shippers. On the other hand, when the shipment originates or terminates at some interior western point on the Southern Pacific, the Sunset-Gulf route offers some advantage in time because the traffic does not have to be hauled to and from the California port as does the canal lines' traffic, but goes directly to, or is received directly from, the East.

Conclusions

In conclusion the report says:

The protestants say that Congress has indicated that traffic through the canal should be increased rather than reduced, and the canal lines kept in vigorous condition. They point to Section 6 (13) (c) of the Interstate Commerce Act, which specifically gives this commission jurisdiction to establish proportional rail rates to and from the ports on traffic moving through the canal; also to Section 5 (9), prohibiting rail carriers from having any interest in steamship lines operating through the canal. Section 500 of the Transportation Act is likewise called to their aid. This enactment declares it to be the policy of Congress to promote, encourage and develop water transportation, service, and facilities in connection with the commerce of the United States, and to foster and preserve in full vigor both rail and water transportation. It must be remembered that the Morgan Line, constituting about half of the Sunset-Gulf route, is a part of our merchant marine and entitled to consideration under the above law.

The applicants as a family have been doing very well without this traffic. They would fare better if they had a substantial portion of it. Some of the stronger canal lines have probably been operating very successfully, while the weaker lines have not. The stronger lines no doubt could live even if the applicants took a substantial portion of the traffic, but the weaker lines might be forced to withdraw from the intercoastal trade and seek other fields, if any profitable ones remain.

Whether or not the relief sought would be economically desirable depends very largely on how much traffic would be taken from the canal lines under equally efficient solicitation. If the amount were small no particular harm would be done, but if it were very large, serious consequences might ensue. The applicants could probably take all of the canal traffic here involved, perhaps only 3 or 4 per cent of the amount of their present family tonnage, without straining their facilities. This would no doubt considerably increase their net earnings, but would put the canal lines out of business. We should take no action that would lead to the latter result. All this relates to the question of whether the proposed differential basis is proper. The matter must be left to speculation or future experience.

The applicants have a fundamental right to run their own affairs, subject to our regulation. It is not our business to control or manage their properties. We have no arbitrary power to grant or deny fourth-section applications according to our private notions, or the desires of particular interests or the general shipping public, but must be governed by definite rules of action gathered from the letter and spirit of the laws of Congress under which we operate. From a cold, practical, business standpoint it seems impossible to conceive of a more clean-cut, outstandingly meritorious case for relief than this is, and so far as we can see, no violations of law would result from granting the applications. The only important question in the case is whether some consideration of public policy requires denial of relief. In the exercise of the discretion vested in us we have considered whether the public interest would be adversely affected by the establishment of the proposed rates. We have decided that it would not.

Motor Coach Bill Held Over

WASHINGTON, D. C.

LEGISLATION to provide for a system of regulation of interstate motor transportation of passengers has again been postponed to await another session of Congress as the result of the failure of the Senate to reach a vote on the Parker bill before Congress adjourned on July 3 until December. The bill, as amended by the committee on interstate and foreign commerce, had been made the unfinished business of the Senate and had been debated to some extent, but there was too much opposition to it to bring it to a vote in the closing days of the session.

The bill received more attention than it had been given previously in the Senate on July 2, when a large number of amendments which had been reported by the committee on interstate commerce were adopted and votes were taken on three of the most controversial features of the bill, but a decision to adjourn was reached rather suddenly on the following day and the bill was not again taken up. Some of the principal opposition to the bill was represented by an amendment offered by Senator Howell, of Nebraska, to strike out the requirement of a certificate of public convenience and necessity, which was rejected. By a vote of 33 to 22 the Senate adopted a compromise amendment offered by Senator Glenn, of Illinois, in place of the committee amendment which would have required the Interstate Commerce Commission to issue a certificate to a qualified applicant for a route on which there is not "competition in good faith between at least two common carriers by motor vehicle," but it also rejected, by a vote of 21 to 27, an amendment proposed by him to strike out the committee amendment which would prohibit in future acquisition of control of a motor coach line by a railroad.

The Glenn substitute amendment which was adopted reads: "If, upon consideration of any application for a certificate of public convenience and necessity, it appears that there is inadequate service by a common carrier by motor vehicle, in whole or in part, upon the route and/or between the fixed termini covered by the proposed operations, then the absence of such adequate service shall be sufficient evidence that the public convenience and necessity will be served by the whole or that part of the operations with respect to which such absence of adequate service exists; and a certificate shall be issued accordingly if the applicant is qualified to comply with the requirements, rules and regulations of the commission for such service. For the purposes of this section service shall not be deemed to be adequate unless there is sufficient operation of motor vehicle equipment by a common-carrier by motor vehicle over the proposed route to meet all reasonable public demand for motor-vehicle transportation." The principal change is in making the existence of "adequate service" the question to be determined, instead of the existence of "actual and adequate competition."

Senator Glenn argued strongly for the elimination of the amendment which would prohibit railroads from engaging in motor coach transportation, saying; "For the convenience of the public for the bus transportation that can be afforded we should not deny its use to the specialists in the carriage of persons, the railroads who have been engaged in the business and who have perfected it through all the years and become specialists in it, and turn it over exclusively to people who have had a short and perhaps no experience in it at all. We should at least give the railroads, whose business it is and has been to transport people, an opportunity to engage in the business, to complement, to supplement their present lines, their present trains, with motor busses where the traffic is not sufficient to justify the hauling of large heavy trains at great expense."

Senator Couzens opposed the Glenn amendment, saying it was in the interest of the railroads "so that they may control all methods of passenger transportation." He said it is well known that in many cases where the large railroads own and operate motor coach lines they are doing everything possible to discredit the motor coach lines, and that "stories have come to me of the Pennsylvania Railroad, for instance, owning and operating a bus line and making it so inconvenient, uncomfortable and disagreeable for bus passengers that they have been compelled to desert the bus lines in transit, having been told by the bus operators, 'you had better go over to the railroad station and take a train.'" If the Glenn amendment is adopted, he said, the bill ought to be killed.

The Senate also adopted some amendments proposed by Senator Bratton, of New Mexico, relating to the requirements as to surety bonds and conditions of employment. One of these would prohibit a motor vehicle operator from being kept on duty more than eight hours consecutively and would require at least two operators for each vehicle having a capacity of more than 20 passengers.

President Approves Rivers and Harbors Bill

WASHINGTON, D. C.

PRESIDENT Hoover on July 4 signed the rivers and harbors bill, passed by Congress, which authorizes projects for the improvement of rivers and harbors estimated to cost $144,000,000 which are parts of more complete projects not yet authorized, the total cost of which is roughly estimated at some $350,000,000. After signing the bill the President issued a statement saying that he had done so with particular satisfaction because it authorizes work he had been advocating for five years. In the aggregate, he said, the inland waterway undertaking represents a larger project than even the Panama canal and "it will provide employment for thousands of men," it "should be fruitful of decreased transportation charges on bulk goods; should bring great benefits to our farms and to our industries," and "should result in a better distribution of population away from the congested centers."

"We can now build the many remaining segments of a definite canalization of our river systems through which modern barge trains of 10,000 to 15,000 tons of burden can operate systematically through the Mid-West and to the Gulf of Mexico, and through the Lakes to the Atlantic," he said. "The system, when completed, will have 12,000 miles of waterways and will give waterway connection between such great cities as New Orleans, Memphis, Knoxville, Chattanooga, St. Louis, Kansas City, Omaha, and Sioux City, Keokuk, Minneapolis, St. Paul, Chicago, Evansville, Cincinnati, Wheeling and Pittsburgh. Through the Great Lakes and the Erie Canal many of these points will have access to central New York and the Atlantic. By its authorization for deepening of lake channels we shall support the present commerce of the Great Lakes and make preparation for ocean shipping by the ultimate

deepening of the St. Lawrence. It authorizes numerous improvements in our harbors.

"It is a long view plan for the future. It will require many years to complete its construction. I do not propose that we shall proceed in a haphazard manner, but that we should approach the problem on sound engineering lines, completing the main systems first.

"Some of the items authorized have not yet been recommended by the engineers, and of course they will not be undertaken unless they are so recommended.

"The bill does not call for any increase in the budget for this fiscal year, the appropriations having been provided by which work will be pushed at all available points to aid the temporary unemployment situation."

Shippers Estimate Carloadings

WASHINGTON, D. C.

ESTIMATES of the Shippers' Regional Advisory Boards anticipate that carload shipments of the 29 principal commodities in the third quarter of 1930 will be approximately 8,806,716 cars, a reduction of 613,603, or 6.5 per cent, below those of the corresponding period in 1929.

All of the 13 regional boards anticipate a reduction in transportation requirements for the third quarter of the year compared with the same period last year, but an increase is anticipated for 9 out of the 29 principal commodities. The estimate by each board follows:

Board	Actual 1929	Estimated 1930	Per Cent of Decrease
Central Western	348,263	347,259	.3
Pacific Coast	401,553	392,507	2.3
Pacific Northwest	316,614	294,889	6.9
Great Lakes	837,752	723,036	13.7
Ohio Valley	980,917	882,450	10.0
Mid-West	1,508,012	1,365,187	9.5
Northwest	768,133	694,775	9.6
Trans-Mo.-Kansas	581,270	562,375	3.3
Southeast	853,337	796,588	6.7
Southwest	620,526	602,010	3.0
New England	179,618	169,463	5.7
Atlantic States	942,063	925,774	1.7
Allegheny	1,082,261	1,050,403	2.9
Total	9,420,319	8,806,716	6.5

The estimate in detail for various commodities for the third quarter of 1930 compared with the same period in 1929 follows:

Commodity	Carloadings Actual 1929	Carloadings Estimated 1930	Estimated Per Cent Inc.	Estimated Per Cent Dec.
Grain, All	527,760	532,609	.9	
Flour, Meal & Other Mill Products	254,274	255,714	.6	
Hay, Straw and Alfalfa	72,407	70,098		3.2
Cotton	73,667	72,385		1.7
Cotton Seed & Products, Except Oil	37,374	34,366		8.0
Citrus Fruits	20,947	13,026		37.8
Other Fresh Fruits	137,471	151,946	10.5	
Potatoes	66,781	73,601	10.2	
Other Fresh Vegetables	75,758	79,436	4.9	
Live Stock	333,226	323,073		3.0
Poultry and Dairy Products	38,563	39,227	1.7	
Coal and Coke	2,410,372	2,280,511		5.4
Ore and Concentrates	977,753	821,534		16.0
Gravel, Sand and Stone	1,022,393	976,424		4.5
Salt	35,503	34,283		3.4
Lumber and Forest Products	930,515	805,071		13.5
Petroleum and Petroleum Products	659,866	670,778	1.7	
Sugar, Syrup and Molasses	57,277	61,177	6.8	
Iron and Steel	577,102	508,216		11.9
Machinery and Boilers	60,039	51,460		14.3
Cement	261,208	267,235	2.3	
Brick and Clay Products	183,040	154,406		15.6
Lime and Plaster	65,373	61,566		5.8
Agric. Implements and Vehicles, Other than Automobiles	30,538	27,394		10.3
Automobiles, Trucks and Parts	250,490	187,073		25.3
Fertilizers, All Kinds	72,259	71,524		1.0
Paper, Paperboard and Prepared Roofing	98,902	96,995		1.9
Chemicals and Explosives	31,672	30,239		4.5
Canned Goods—All Canned Food Products (includes Catsup, Jams, Jellies, Olives, Pickles, Preserves, etc.)	57,789	55,349		4.2
Total All Commodities Listed	9,420,319	8,806,716		6.5

Looking Backward

Fifty Years Ago

Two new passenger stations are rapidly assuming shape in Chicago, one for the joint use of the Pittsburgh, Fort Wayne & Chicago [now part of the Pennsylvania], the Chicago & Alton and the Chicago, Milwaukee & St. Paul, near the corner of West Madison and Canal streets, and the other for the numerous divisions of the Chicago & North Western, at Wells and Kinzie streets.—*Railway Age,* July 15, 1880.

The rails of the Denver & Rio Grande [now the Denver & Rio Grande Western] reached Leadville, Colo., 280 miles from Denver, on July 5. The company announces that it will operate Pullman sleeping cars and reclining chair cars on all its regular passenger trains from Denver to Leadville, making it now possible to make the entire trip from New York to the mining town in Pullman cars.—*Railroad Gazette,* July 9, 1880.

It is already certain that the year 1880 will be marked by an activity in the projection and construction of railways that has not been equalled since the panic of 1873, and it is not improbable that the addition to the mileage during the present twelve months may exceed that constructed in 1871, the year of the greatest increase, when over 7,200 miles of new track were laid. Rails have been going down in 29 states and territories since January 1 and up to July 1 fully 1,700 miles had been laid. From a partial list of construction in progress upon 110 railways in 35 states and territories, it is evident that the total mileage this year will approximate 8,000.—*Railway Age,* July 15, 1880.

Twenty-Five Years Ago

C. G. Delo, heretofore division engineer of the Chicago Great Western at Des Moines, Iowa, has been appointed engineer maintenance of way of the Western division of the Chicago & Alton, with headquarters at Kansas City, Mo. F. G. Jonah, terminal engineer of the New Orleans Terminal Company at New Orleans, La., has been appointed assistant engineer, with headquarters at New Orleans, in charge of the St. Louis & San Francisco deep water terminals at Chalmette. —*Railway Age,* July 14, 1905.

A special train on the Atchison, Topeka & Santa Fe, consisting of baggage, dining and standard sleeping cars, made a phenomenal run between Los Angeles, Cal., and Chicago, ending at Chicago on July 11, a trip of 2,244.5 miles covered in 44 hours and 54 minutes, or at the rate of 50 miles per hour, including dead time. The train was chartered by Walter Scott, a millionaire of California, and cut 13 hours and 2 minutes from the fastest previous run, which was made in March, 1900.—*Railway Age,* July 14, 1905.

Ten Years Ago

At a meeting of the Association of Railway Executives in New York on July 1, measures were adopted for the purpose of bringing about closer co-operation between the railways themselves and between them and the Interstate Commerce Commission, and increasing the efficiency of railroad operation. The plan for improving the situation, which was adopted, provides for the creation of an advisory committee of executive officers to deal with the Commission and exercise general supervision over the handling of equipment and the movement of traffic, and revision of the Car Service rules, and their filing with the Commission to give them the force of law.—*Railway Age,* July 9, 1920.

New Books

Co-ordinated Motor-Rail-Steamship Transportation, by G. Lloyd Wilson. Illustrated, 228 pages, 8½ in. by 5½ in. Bound in cloth. Published by D. Appleton & Co., New York. Price $3.50.

Professor Wilson, who holds the chair of commerce and transportation at the Wharton School of Finance and Commerce, University of Pennsylvania, has long been familiar to readers of Appleton's Transportation Series. For it he has previously written "Traffic Management" and, "Motor Traffic Management," and has collaborated with Emory R. Johnson, editor of the series, and Grover C. Heubner in the writing of "Principles of Transportation."

In the present book Mr. Wilson surveys the status of the various agencies of transport and the pending efforts to co-ordinate them. Initial chapters discuss the significance of co-ordinated transportation and the railway terminal problem. From this latter point the book proceeds to describe the co-ordinated rail-motor truck terminal services at St. Louis, Cincinnati, New York and Chicago. These services are familiar to regular readers of *Railway Age* as also are the line freight trucking services from concentration points and the container services next discussed. Subsequent chapters consider cartage services in Canada and Great Britain, past attempts at store-door service in the United States, co-ordinated rail-motor coach service, the place of the rail motor car and co-ordinating developments in the electric railway and the marine fields.

The author throughout the book develops the thesis that "the interests of the shipper, the carriers, and the public are best served if each instrumentality of transportation is used in the services to which it is especially fitted and for which it is most efficient and economical. The place of each agency is definitely ascertained by experiment, analysis, and adjustment, and not by a priori reasoning." He finds in concluding that several factors are now "impelling shippers and carriers toward the co-ordination of rail, electric railway, steamship and motor freight services, and toward an improved and more efficient transport system. Constructive legislation and open-minded investigation of the fields of the several types of carriers serving the public are necessary to achieve this goal."

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Agricultural Economics—A Select List of References, compiled by Mary G. Lacy, Librarian. Revised 1930 edition of Agricultural Economics Bibliography No. 1. 21 p. Pub. by U. S. Bureau of Agricultural Economics, Washington, D. C. *Apply.*

The Channel Tunnel—Statement of Policy. The Channel Tunnel Committee report was included in the Booklist for April 12, 1930. This statement concludes "Having regard to the element of doubt as to the feasibility of construction, the weakness of the economic case, the great cost, the long period before which the capital expended could fructify, and the small amount of employment provided, the Government have come to the conclusion that there is no justification for a reversal of the policy pursued by the successive Governments for nearly fifty years in regard to the Channel Tunnel." Dated June 4, 1930. 6 p. Pub. by H. M. Stationery Office, London, Eng. 1 penny. Available in this country through British Library of Information, New York City.

A List of Printed and Illustrated Material on the Liverpool & Manchester Railway in the Reference Library, compiled under the direction of the Chief Librarian, by W. A. Phillips. "In view of the Centenary celebrations of the opening of the Liverpool and Manchester Railway, to be held in Liverpool in September, 1930, it has been thought desirable to place in the hands of the research worker and general reader a bibliography of the collection referred to above, in order to provide a medium for easy access to the early surveys, maps, Acts of Parliament, views, illustrations of rolling stock, and general literature bearing on the subject." Preface, p. 3. 35 p. Pub. by Libraries, Museums and Arts Committee of the City of Liverpool, England. *Apply.*

The Relation of the Law Department to the Accounting Department, by R. V. Fletcher. Address to the Forty-Second annual meeting of the Railway Accounting Officers Association. Discusses the past, railroad extensions, issuance of securities, rate litigation, state regulation, consolidations, valuation, recapture, taxation. 9 p. Pub. by Railway Accounting Officers Association, Washington, D. C. *Apply.*

Report on the Railway System of Tanganyika Territory, by Brig.-Gen. F. D. Hammond. "The total route mileage of the Railways is 1,281 miles of metre, 15 miles of 2-ft. 6 in., and 78 miles of 2 ft. gage. . . ." The work of the Engineering, Locomotive, Traffic, Marine, Harbours and Wharves, Dockyard and Slipway, Stores, and Accounts departments is discussed. Passenger and freight services and rates, problems of management and personnel, and future policy and development are also discussed. 99 p. Map. Pub. by The Crown Agents for the Colonies, London, Eng. 5 shillings.

Revision de Escalafones, Convenios y Reglamentos—Estudio En Base a las Condiciones Económicas del País, Situación Financiera de la Empresas, Condiciones del Personal en Relación al Costo de la Vida y Rendimiento del Trabajo. Stenographers' minutes of the meeting of the Special Commission of representatives of the railway companies and of the railway employees on March 31, 1930, at Buenos Aires. This commission was created by a decree of President Irigoyen on March 20. Economic conditions, financial condition of the railway companies, scales of wages, working conditions of railwaymen, and related subjects were discussed. 356 p. Pub. for the railway companies by Gmo. Kraft, Ltda., Buenos Aires, Argentina.

Periodical Articles

Brazilian Railways Experiment With Alcohol Fuel, by Rudolf L. Cahn. "The fuel used, known under the name of 'Azulina', consists of 43 per cent alcohol with an addition of 5 per cent of ethylic ether, extracted from the alcohol itself, and one one-thousandth of methylene blue as a denaturant. The railway motor car in which it was used was manufactured by the German A. E. G. . . ." p. 827. Commerce Reports, June 30, 1930, p. 827-828.

The Dependability and Meaning of Unemployment Statistics in the United States, by Royal Meeker. "In this paper I discuss unemployment and employment statistics and indicate that oftentimes conclusions which are confidently based upon some of these figures must be rejected or mixed ton for ton with the saving salt of skepticism." p. 385. Takes up what statistics are available, i.e. Bureau of Labor Statistics, Trade union, Federal Reserve Board indexes, National Industrial Conference Board, censuses, etc., and comments upon them. Harvard Business Review, July 1930, p. 385-400.

Effect of Noise Upon Efficiency. Résumé of results of experiments in offices and in shops, made by Dr. Donald Laird. Monthly Labor Review, June 1930, p. 1-10.

Opposition to Central Purchasing by Railways Discussed. A. S. A. (American Standards Association) Bulletin, June 1930, p. 12.

Railroad Consolidation. Report of the Special Committee, Thomas C. Desmond, Chairman. Discussion includes resolutions introduced by Milton Harrison and L. F. Loree, with comment on both. Monthly Bulletin of the Chamber of Commerce of the State of New York, June 1930, p. 115-120, Discussion, p. 120-130.

Odds and Ends of Railroading

"Bonita Muchacha"

Senorita Consuelo Trevino, sister of Tomas Trevino, car department laborer for the Gulf Coast Lines at Kingsville, Texas, has been chosen "Princesita," or beauty queen, by the Mexican colonies of South Texas.

Petrified Ornament

One of the sights that attract attention at the station grounds of the Chicago, Rock Island & Pacific at El Reno, Okla., is a large petrified tree trunk. This trunk is from Alderson, Okla., where, in 1912, a huge petrified forest was discovered, while sinking a coal mine shaft.

A Predicament

"Did I hear you say, conductor, that the locomotive was at the rear of the train?"

"Yes, ma'am. We've got a locomotive at each end. It takes an extra one to push us over the pass."

"Dear, dear, what shall I do? I'm always sick if I ride with my back to the locomotive."—Exchange.

Silvery Tenors

In the contest for conductors who call "All Aboard" with the greatest neatness and dispatch, not to mention musical intonation, we enter the name of Conductor H. P. Banks of the Michigan Central, whose dulcet tenor is well known to patrons of M. C. trains Nos. 43 and 44. There is a real art in calling "All Aboard." It can be done brusquely and it can be done in a manner pleasing to the passengers. A surprising number of conductors have cultivated a pleasing manner in this regard.

Friendliness from the Observation Platform

One difference that is apparent in observation platform riding on several eastern as compared with a number of western roads is the habit that track gangs, signal maintainers and crossing watchmen and passengers have of exchanging greetings with a wave of the hand. A daylight ride on at least two eastern lines keeps the conscientious and friendly passenger almost constantly returning an employee's salute. But on two roads operating west of Chicago, by way of comparison, a rear platform ride becomes rather lonely by way of contrast. A mere glance at the receding train suffices for the trackman.

World's Smallest Pension

What is believed to be the world's smallest pension is collected at Guilford, England, weekly by Charles Pearce, 72, retired railway employee. A veteran of 40 years' service, he draws six cents a week. He explains that the company originally paid him $2.46 a week. Later he qualified for a government old-age pension of $2.40, whereupon his railroad pension was reduced by that amount. It is not the amount that leads him to collect his due, but the fact that so long as he collects it he remains on the company's books. And while on the books he is entitled to one free pass a year, with the privilege of quarter-fare tickets for his family.

Car Loadings in Another Form

According to R. H. Aishton, president of the American Railway Association, if the total cars that were loaded last year were placed in a solid train and hooked up with sufficient motive power, it would require 1,000,000 engines and a similar number of caboose cars to house the train crews necessary to handle the train. The crew would be three times as large as the entire population of Chicago. By using a conservative length for each unit of this composite train, there would be 10,000 miles of locomotives, 390,730 miles of train and 5,685 miles of caboose cars, an over-all length of 406,417 miles. Routed west through Chicago and reported on block at 7 a.m. traveling 30 miles per hour, it would require approximately 564 days and 11 hours to clear the block after having wrapped itself around the world 16 times enroute.

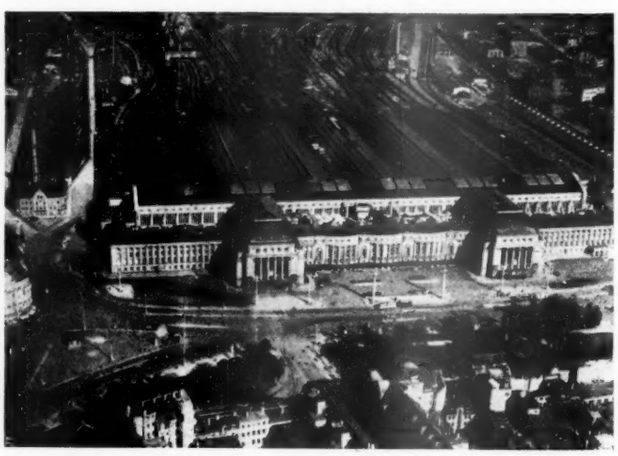
The Long Island Palmers

John and Hattie Palmer, brother and sister, should be nominated as sure winners in the contest for members of the same family who have had the same length of railway service on the same railroad. When the Palmers retired on June 1, they had each served the Long Island for 46 years. Miss Palmer, since her first appointment as a telegraph operator in 1884, has been located at various Long Island stations in Brooklyn and Queens. The Murray Hill station in Flushing where she served for 20 years, came to be familiarly known to residents of that vicinity as the "Palmer House." John Palmer's entry into railway service resembles a chapter from a Horatio Alger novel. When 17 years of age, while driving a grocery wagon, he met with an accident at a Long Island crossing, which partially incapacitated him. Austin Corbin, then president of the road, promised Palmer that if he would learn telegraphy he would be employed as an operator. When Palmer retired he was chief ticket agent at the Jamaica station.

By Way of Comparison

Loud speakers for train announcing have been installed at the stations of Ghent and Bruges, on the Belgian State Railways. The announcers, however, manage to be just as unintelligible in French as our own announcers are in English on some occasions. Nor is this the only railroading similarity. Belgian, Dutch and German engine drivers bear a great resemblance to our own, and, in an interlocking tower in Malines, Belgium, a towerman was observed who might have been transplanted bodily, pipe, cap and all, from any American interlocking tower you care to name. The gatemen and station employees, however, run to long, drooping mustaches. The rather bizarre uniforms and amazing hats of the conductors distinguish them from our men. In general, too, they are much younger, since conductoring is by no means the well-paid and important position that it is in America. There is a certain similarity in equipment and buildings, too, although not so marked. The enginehouses and erecting shops just outside of Brussels are identical, in outside appearance, with those to be found in America, and the yard offices are so like as to make one homesick to see them.

* * *



The Largest Passenger Station in the World, Leipzig, Germany

NEWS *of the* WEEK

Erie Yards, Weehawken, N. J., with the Hudson River and Lower Manhattan in the Background

THE OFFICES of the operating department of the Seaboard Air Line, now located in Savannah, Ga., will be moved to Norfolk, Va., on August 1.

EFFECTIVE JULY 1, the Camden terminal division of the Pennsylvania was abolished and the territory was merged with the Atlantic division.

PHILIP H. PORTER, counsel for the Railroad Commission of Wisconsin, has been appointed a member of that body, succeeding Lewis H. Gettle, deceased.

THE ST. LOUIS SOUTHWESTERN has moved its general and commercial offices (St. Louis, Mo.) from the Buder building to the Cotton Belt building, formerly the Planters' building, at Fourth and Pine streets.

NO ACCIDENT FOR 40 YEARS is the record of a highway grade crossing on the Delaware, Lackawanna & Western in Cassville, N. Y., near Richfield Junction, according to a statement made by the citizens of the village; yet the crossing is one which the New York State Public Service Commission has placed on its program for elimination. The statement is made in a petition to the Public Service Commission asking to have the question reopened. The Commission has agreed to give a re-hearing. The villagers aver that the substitution of a bridge for the level crossing will practically divide the village into two parts, and they claim that the proposed change is not required by the public welfare.

The Clerks' Bank

The Brotherhood of Railway Clerks' National Bank at Cincinnati, Ohio, which was closed by its directors on June 26, was reopened on July 5 as a branch of the Central Trust Company of that city.

Alaska Railroad to Be Investigated

The Senate on July 1 passed the resolution introduced by Senator Howell, of Nebraska, providing for the appointment of a committee of three Senators to investigate the operations, economic situation, and prospects of the Alaska Railroad, and to report to Congress with recommendations for legislation. The Vice-President has appointed Senators Howell and Thomas, of Idaho, and Kendrick of Wyoming, as members of the special committee.

Los Angeles Station Order Reaffirmed

The Supreme Court of California on July 1 denied the petition of the Southern Pacific, the Los Angeles & Salt Lake and the Atchison, Topeka & Santa Fe, for a re-hearing of the court's recent order upholding a decision of the Railroad Commission of California in which those carriers were directed to proceed with the construction of a union passenger station at Los Angeles.

Couzens Resolution Fails of Passage

Congress adjourned on July 3 until next December without a vote having been taken in the House on the Couzens resolution to suspend the powers of the Interstate Commerce Commission as to railroad unification or upon the substitute for the Senate resolution which was reported by the House committee. The latter would have suspended the commission's authority only as to the proposed Great Northern-Northern Pacific unification but would have prohibited further acquisitions of control of two or more railroads by holding company or otherwise without the approval of the commission.

The advocates of the Couzens resolution in the form it had passed the Senate had talked about preventing adjournment unless it were passed by the House and had planned a vigorous fight against the adoption of the substitute, but the resolution was not brought to the stage of a vote in either form and the final decision to adjourn was reached rather suddenly after it had become apparent that efforts to deal with any more legislation would merely add to the congestion that already existed.

The resolution remains on the calendar of the House for possible consideration at the short session which begins in December and meanwhile the Interstate Commerce Commission's docket includes very few applications for authority for unifications of the kind which it was proposed to stop. The Great Northern Pacific case remains incomplete until the railroads concerned offer to comply with the conditions imposed by the commission. The application of the Denver & Rio Grande Western for authority to acquire control of the Denver & Salt Lake has been set for argument on July 14. The remaining chief applications before the commission are those of the Pittsburgh & West Virginia for authority to acquire control of the Wheeling & Lake Erie and the Western Maryland. Hearing on the former application has been concluded and the hearing as to the Western Maryland has been postponed.

The Baltimore & Ohio, the Chesapeake & Ohio and the Wabash are expected to file general applications some time in place of those which were filed last year and were withdrawn after the promulgation of the commission's consolidation plan, but have given no indication as to how soon they will do so.

Revenues and Expenses for May

Class I railroads in the first five months of 1930 had a net railway operating income of $307,659,543, which was at the annual rate of return of 3.68 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the first five months of 1929, their net railway operating income was $457,017,242, or 5.58 per cent. Operating revenues for the five months totaled $2,246,434,269, compared with $2,534,928,166 for the same period last year, or a reduction of 11.4 per cent. Operating expenses amounted to $1,738,515,556, a reduction of 6.9 per cent.

Class I railroads in the first five months paid $149,690,335 in taxes, compared with $162,544,885 for the same period the year before. For May alone, the tax bill amounted to $31,210,386, a decrease of $2,724,423 under the previous year.

Twenty-nine Class I railroads operated at a loss in the first five months of 1930, of which 8 were in the Eastern district, 3 in the Southern and 18 in the Western.

Net railway operating income by districts for the first five months of 1930

(Continued on page 86)

Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1930

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Akron, Canton & Youngstown	May	171	$258,731	$146	$268,692	$55,170	$21,588	$14,147	$70,181	$18,791	$176,924	65.8	$91,768	$73,309	$47,652	$124,827
	5 mos.	171	1,230,330	533	1,276,246	204,172	125,447	72,218	354,261	92,035	838,628	65.7	437,618	345,603	229,391	476,641
Atchison, Topeka & Santa Fe	May	9,630	10,624,275	2,483,640	14,586,185	3,181,673	3,437,470	425,811	4,803,213	474,738	12,275,171	84.2	2,311,014	1,284,416	1,217,911	3,520,413
	5 mos.	9,630	53,584,063	12,564,424	73,349,449	14,122,575	17,077,973	2,129,753	24,050,280	2,302,763	59,591,690	81.2	13,757,759	8,300,521	7,974,321	17,734,820
Gulf, Colorado & Santa Fe	May	1,942	1,492,022	138,033	1,770,750	445,339	482,614	56,330	615,279	74,874	1,666,963	94.1	103,787	3,858	—132,203	—143,816
	5 mos.	1,943	8,214,228	688,457	9,536,948	2,787,598	2,432,951	284,227	3,314,474	383,445	9,112,209	95.5	424,739	—58,671	—770,644	714,341
Panhandle & Santa Fe	May	1,569	966,508	80,201	1,120,240	429,384	295,563	18,702	383,024	40,531	1,158,527	103.4	—38,287	—90,864	—213,812	156,590
	5 mos.	1,569	5,206,297	405,517	6,007,216	2,024,103	1,471,933	98,048	1,935,163	201,479	5,664,722	94.3	342,494	80,377	—550,130	852,899
Atlanta & West Point	May	93	129,310	35,489	195,363	31,768	40,041	12,150	79,114	12,456	180,378	92.3	14,985	—1,067	—14,564	7,272
	5 mos.	93	711,190	204,932	1,056,288	132,154	189,120	60,997	410,511	60,018	876,899	83.0	179,389	107,619	42,582	87,517
Western of Alabama	May	133	145,397	38,691	209,311	32,398	47,290	12,722	73,558	13,276	183,269	87.6	26,042	9,204	11,628	30,274
	5 mos.	133	843,440	220,424	1,176,995	166,695	231,711	62,799	395,949	65,173	942,536	80.1	234,459	156,488	154,230	133,634
Atlanta, Birmingham & Coast	May	639	258,692	15,237	316,255	82,080	75,481	30,498	151,079	25,720	374,641	118.5	—58,386	—73,449	—85,895	—43,666
	5 mos.	639	1,424,758	82,564	1,707,558	435,367	390,912	144,051	754,882	102,544	1,881,150	110.2	—173,592	—249,051	—331,571	—173,802
Atlantic Coast Line	May	5,154	3,873,989	740,045	5,166,831	828,328	1,034,237	167,671	1,910,940	176,016	4,152,963	80.4	1,013,868	507,943	421,590	1,246,403
	5 mos.	5,154	21,789,461	6,691,537	31,503,774	4,336,358	5,395,330	888,566	10,311,224	897,945	22,238,395	70.6	9,265,379	6,475,792	5,741,173	9,670,374
Charleston & Western Carolina	May	342	220,482	7,600	237,216	61,948	38,010	7,056	90,760	7,418	205,182	86.5	32,034	14,528	7,421	24,784
	5 mos.	342	1,155,516	38,551	1,240,588	315,901	194,177	36,538	464,558	36,578	1,047,713	84.5	192,875	101,328	76,503	238,363
Baltimore & Ohio	May	5,658	16,255,888	1,625,558	19,230,278	2,072,754	4,066,682	542,689	6,379,937	680,051	13,937,081	72.5	5,293,197	4,387,547	4,091,228	4,961,902
	5 mos.	5,658	74,899,713	7,784,985	88,541,682	10,361,027	19,659,052	2,708,751	31,635,841	3,458,524	68,719,244	77.6	19,822,438	15,132,350	14,029,178	17,702,763
Baltimore & Ohio Chgo. Term.	May	85	.....	.....	344,942	49,437	41,992	2,762	171,561	18,287	289,937	84.1	55,005	7,389	112,512	151,333
	5 mos.	85	.....	.....	1,631,245	202,250	227,820	12,513	888,142	96,325	1,459,580	89.5	171,665	—127,640	442,549	490,828
Staten Island Rapid Transit	May	23	69,688	133,325	214,848	23,054	18,973	2,159	99,807	15,612	159,605	74.3	55,243	38,243	25,183	37,025
	5 mos.	23	319,843	608,930	976,943	83,198	78,558	10,770	509,289	77,171	758,986	77.7	217,957	129,885	95,938	40,262
Bangor & Aroostook	May	619	743,414	30,099	807,325	130,877	126,168	6,889	157,095	26,394	450,610	55.8	356,715	285,668	282,439	149,702
	5 mos.	619	4,074,987	318,225	4,550,105	617,696	671,421	30,943	1,001,207	133,829	2,468,397	54.3	2,081,708	1,705,908	1,629,552	1,226,788
Belt Ry. Co. of Chicago	May	57	.....	.....	599,385	70,372	60,517	4,255	283,430	12,138	430,712	71.9	168,673	129,144	156,067	144,975
	5 mos.	57	.....	.....	2,979,796	303,931	325,171	20,199	1,438,451	59,486	2,147,238	72.1	832,558	570,824	758,064	751,623
Bessemer & Lake Erie	May	227	1,662,616	3,767	1,686,735	198,625	333,383	14,266	316,987	36,206	903,000	53.5	783,735	686,170	659,747	1,058,008
	5 mos.	227	4,449,941	26,189	4,562,010	610,803	1,634,809	71,493	1,278,323	180,843	3,787,951	83.0	774,059	561,471	626,373	1,594,597
Bingham & Garfield	May	33	31,395	.....	32,196	5,786	8,280	1,470	7,450	4,833	27,933	86.8	4,263	—2,090	14,553	31,440
	5 mos.	33	163,924	.....	168,219	25,859	42,739	8,113	41,992	25,025	144,346	85.8	23,873	—7,501	75,078	104,412
Boston & Maine	May	2,090	4,171,552	1,066,404	6,108,426	1,094,380	1,034,199	89,402	2,136,052	217,576	4,593,544	75.2	1,514,882	1,221,557	1,021,912	1,106,728
	5 mos.	2,090	19,623,487	5,776,952	29,351,819	4,846,239	4,852,141	455,888	10,817,409	1,090,707	22,178,612	75.6	7,173,207	5,829,492	4,746,135	5,173,300
Brooklyn Eastern Dist. Term.	May	11	119,551	.....	121,910	10,122	16,953	1,117	38,169	5,710	72,071	59.1	49,839	42,278	42,278	44,784
	5 mos.	11	563,095	.....	574,616	45,924	78,474	3,173	183,583	28,367	339,521	59.1	235,095	199,420	199,420	211,031
Buffalo & Susquehanna	May	253	142,815	557	156,276	29,648	44,510	2,179	44,573	7,533	128,443	82.2	27,833	25,758	36,955	21,496
	5 mos.	253	687,000	4,086	747,695	145,029	243,021	10,158	222,722	44,662	665,592	89.0	82,103	83,588	150,248	187,657
Buffalo, Rochester & Pittsburgh	May	601	1,269,650	48,569	1,364,134	186,998	349,875	37,175	514,432	45,141	1,135,783	83.3	228,351	188,324	194,466	275,254
	5 mos.	601	6,031,299	283,417	6,525,949	720,693	1,834,588	189,335	2,545,578	226,325	5,526,577	84.7	999,372	799,279	873,891	1,242,466
Canadian Pacific Lines in Maine	May	233	174,973	18,505	208,598	115,170	45,563	7,858	82,403	4,384	255,378	122.4	—46,780	—61,280	—81,667	—106,361
	5 mos.	233	1,125,515	164,734	1,369,565	254,765	287,105	36,812	547,287	22,070	1,148,039	83.8	221,526	149,026	46,683	21,898
Canadian Pacific Lines in Vermont	May	85	103,390	21,816	149,587	59,473	34,921	2,047	94,911	2,418	193,716	129.5	—44,129	—48,149	—80,368	—53,954
	5 mos.	85	541,851	138,134	787,653	154,247	180,538	9,596	462,244	12,337	818,908	100.3	—31,255	—51,355	—204,862	—188,049
Central of Georgia	May	1,944	1,314,458	213,796	1,713,161	183,187	341,346	69,630	710,221	85,369	1,403,027	81.9	310,134	210,938	226,478	336,405
	5 mos.	1,944	7,123,774	1,392,535	9,572,613	1,117,311	1,716,751	340,349	3,762,706	420,532	7,438,404	77.7	2,134,209	1,517,229	1,519,865	1,867,967
Central New Jersey	May	692	3,762,974	679,334	4,745,961	484,206	968,713	59,564	1,733,809	136,778	3,410,090	71.9	1,335,871	778,333	640,371	663,318
	5 mos.	692	17,213,773	3,304,172	21,930,272	2,226,520	4,972,535	309,670	8,604,135	672,855	16,920,860	77.2	5,009,412	3,281,012	2,615,301	3,229,625
Central Vermont	May	469	574,229	69,598	708,232	170,691	107,456	18,744	291,061	24,613	614,536	86.8	93,696	77,670	93,917	96,752
	5 mos.	469	2,480,850	399,253	3,186,180	534,438	537,514	89,731	1,404,286	131,696	2,707,410	85.0	478,770	398,706	492,349	700,330
Chesapeake & Ohio	May	3,087	10,989,718	525,245	12,117,015	1,612,517	2,364,698	155,519	2,936,968	330,978	7,424,108	61.2	4,692,907	3,866,000	3,834,755	3,664,810
(Includes Hocking Valley)	5 mos.	3,087	51,788,847	2,416,461	56,700,687	8,289,017	12,332,142	827,645	14,634,792	1,687,108	37,885,764	66.8	18,814,923	14,686,596	15,025,748	15,989,610
Chicago & Alton	May	1,028	1,554,207	361,758	2,153,970	400,030	527,002	80,991	800,772	119,444	1,941,435	90.1	212,535	98,656	—73,411	74,216
	5 mos.	1,028	7,254,670	1,933,273	10,297,384	1,266,848	2,530,416	377,966	4,024,113	360,481	8,648,812	84.0	1,648,572	1,079,708	164,114	1,136,191
Chicago & Eastern Illinois	May	946	1,307,252	225,020	1,697,965	203,748	358,501	81,278	685,086	73,495	1,401,366	82.5	296,599	165,640	3,191	59,542
	5 mos.	946	6,769,295	1,162,721	8,707,185	1,122,221	1,934,584	412,073	3,666,091	358,425	7,527,663	86.5	1,179,522	555,896	—235,015	597,798
Chicago & Illinois Midland	May	131	241,308	3,594	254,759	32,316	59,221	22,521	65,795	39,939	219,069	86.0	35,690	27,353	26,954	19,434
	5 mos.	131	1,192,777	28,492	1,272,391	149,141	285,444	106,193	384,457	119,628	1,043,553	82.0	228,838	187,161	162,856	217,457
Chicago & North Western	May	8,458	8,442,662	1,628,931	11,387,817	1,966,083	2,227,727	210,880	4,206,676	402,834	9,035,739	79.3	2,352,078	1,576,009	1,446,649	2,320,552
	5 mos.	8,458	38,830,510	7,851,992	52,567,885	7,237,423	11,510,926	1,068,068	21,448,223	1,907,529	43,299,507	82.4	9,268,378	5,331,769	4,433,977	6,847,232

Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Chicago, Burlington & Quincy	May	9,325	$8,491,478	$1,241,979	$11,019,177	$2,406,600	$1,903,337	$310,503	$3,797,037	$372,445	$8,894,642	80.7	$2,124,535	$1,333,518	$1,097,562	$1,559,921
	5 mos.	9,343	44,307,553	6,067,980	56,749,571	7,431,795	8,598,372	1,557,718	19,977,483	1,882,048	39,955,677	70.4	16,793,894	12,114,719	10,934,417	14,469,882
Chicago Great Western	May	1,495	1,578,213	155,360	1,893,981	337,142	255,818	88,490	728,049	56,240	1,469,634	77.6	424,347	340,747	152,514	135,334
	5 mos.	1,495	7,634,287	856,837	9,221,075	1,121,450	1,395,493	418,670	3,854,935	280,897	7,109,317	77.1	2,111,758	1,682,286	854,362	478,000
Chicago, Indianapolis & Louisville	May	647	994,074	168,327	1,309,113	159,464	258,552	40,699	468,177	35,873	979,729	74.8	329,384	251,256	129,819	259,028
	5 mos.	647	5,124,631	698,650	6,456,413	700,743	1,405,924	196,935	2,437,978	185,191	4,986,455	77.2	1,469,958	1,073,606	462,320	897,825
Chicago, Mil., St. Paul & Pacific	May	11,340	9,738,080	1,038,760	12,041,953	2,567,084	2,357,667	336,759	4,472,507	377,028	10,137,151	84.2	1,904,802	1,103,756	735,416	1,821,949
	5 mos.	11,287	47,050,842	5,166,613	58,069,475	8,712,111	12,419,759	1,598,001	23,058,735	1,925,592	47,933,576	82.5	10,135,899	6,141,583	4,375,718	8,538,068
Chicago River & Indiana	May	20	.....	.....	525,291	43,000	46,400	1,888	186,252	17,099	294,639	56.1	230,652	188,014	259,566	310,204
	5 mos.	20	.....	.....	2,654,229	255,000	253,600	6,166	962,184	90,237	1,567,187	59.0	1,087,042	880,529	1,242,741	1,469,554
Chicago, Rock Island & Pacific	May	7,592	7,380,183	1,199,092	9,611,384	1,350,713	1,858,901	269,003	3,627,547	354,957	7,521,794	78.3	2,089,590	1,578,749	1,054,988	1,077,172
	5 mos.	7,592	37,560,648	6,482,998	48,889,763	6,147,592	9,692,200	1,277,983	19,014,263	1,755,499	38,359,055	78.5	10,530,708	7,755,693	5,493,731	6,284,196
Chicago, Rock Island & Gulf	May	566	414,290	57,403	520,055	101,899	46,820	21,047	196,192	21,499	385,654	74.2	134,401	116,926	74,074	110,193
	5 mos.	566	2,160,137	308,344	2,693,937	433,653	288,810	108,179	989,803	110,262	1,933,133	71.8	760,804	660,926	465,708	867,540
Chicago, St. Paul., Minn. & Omaha	May	1,746	1,541,994	258,364	1,972,795	358,083	413,042	42,770	830,103	84,020	1,735,402	88.0	237,393	134,653	56,981	210,854
	5 mos.	1,746	7,971,023	1,312,133	10,076,126	1,365,942	1,999,512	209,745	4,428,170	423,414	8,478,519	84.1	1,597,607	1,064,531	688,115	706,383
Clinchfield Railroad	May	309	476,750	9,311	497,483	58,774	132,739	22,607	111,567	16,832	342,108	68.8	155,375	85,375	146,438	141,492
	5 mos.	309	2,597,068	52,766	2,700,749	311,137	686,527	109,230	577,660	88,940	1,773,451	65.7	927,298	577,218	932,928	1,170,898
Colorado & Southern	May	1,038	669,751	56,783	803,904	153,499	155,327	16,121	286,395	44,727	659,906	82.1	143,998	73,981	55,918	30,323
	5 mos.	1,039	3,594,148	310,077	4,298,526	649,927	829,568	82,302	1,543,431	218,985	3,331,819	77.5	966,707	616,262	505,369	583,311
Ft. Worth & Denver City	May	696	520,514	100,286	686,392	109,438	145,123	24,143	253,022	39,754	572,154	83.4	114,238	81,164	66,109	101,226
	5 mos.	696	2,999,840	543,178	3,847,140	597,300	803,706	101,372	1,299,667	197,196	3,001,214	78.0	845,926	653,133	588,654	1,046,931
Wichita Valley	May	271	65,500	2,398	72,616	29,524	6,242	58	30,448	1,641	67,751	93.3	4,865	—2,207	—21,708	—9,449
	5 mos.	271	333,810	15,732	374,055	118,767	30,289	138	151,303	7,732	304,542	81.4	69,513	33,945	—60,199	86,737
Columbus & Greenville	May	167	104,401	12,743	124,945	40,666	16,457	3,741	48,554	11,176	119,265	95.5	5,680	3,678	2,266	8,771
	5 mos.	167	596,860	72,793	712,343	161,603	100,015	21,230	253,672	59,628	593,834	83.4	118,509	94,071	80,686	46,435
Conemaugh & Black Lick	May	20	93,564	.....	158,524	14,170	19,088	2,068	83,991	3,588	122,906	77.5	35,619	34,619	38,569	61,014
	5 mos.	20	356,803	.....	694,190	59,033	121,369	5,626	415,904	18,743	620,675	89.4	73,515	68,515	80,674	98,703
Delaware & Hudson	May	881	2,854,190	187,330	3,250,613	455,252	712,985	65,028	1,173,440	153,499	2,566,854	79.0	683,759	560,705	537,637	759,575
	5 mos.	881	13,568,716	1,031,226	15,628,805	2,239,099	3,794,097	290,732	5,850,305	831,023	13,033,979	83.4	2,594,826	1,979,393	1,937,860	2,638,859
Delaware, Lackawanna & Western	May	998	4,513,894	828,293	6,182,402	719,508	1,012,962	157,059	2,414,414	174,635	4,519,464	73.1	1,662,938	1,120,768	1,109,336	1,483,728
	5 mos.	998	21,366,325	4,104,068	29,146,894	2,852,652	5,675,624	726,086	12,317,898	894,025	22,667,675	77.8	6,479,219	4,071,629	4,052,040	6,572,551
Denver & Rio Grande Western	May	2,561	1,965,842	175,712	2,315,658	414,888	433,027	60,645	655,214	90,727	1,665,266	71.9	650,392	485,301	516,894	511,581
	5 mos.	2,561	9,687,444	920,491	11,451,830	1,592,295	2,479,002	288,220	3,617,981	460,455	8,515,760	74.4	2,936,070	2,055,003	2,190,963	2,903,878
Denver & Salt Lake	May	232	198,767	10,818	225,272	58,595	55,126	2,240	38,291	41,224	193,316	85.8	31,956	14,921	27,668	2,217
	5 mos.	232	1,044,606	74,881	1,196,239	217,668	309,834	12,265	210,864	91,682	836,043	69.9	360,196	287,104	326,279	537,235
Detroit & Mackinac	May	241	96,350	5,884	110,705	28,133	22,224	2,375	37,328	8,908	90,083	81.4	20,622	27,043	28,023	42,878
	5 mos.	260	358,597	38,589	435,661	90,341	98,905	11,786	178,941	38,812	406,561	93.3	29,100	—2,567	—1,690	72,896
Detroit & Toledo Shore Line	May	50	316,626	.....	321,685	53,880	35,098	8,319	80,280	8,724	186,266	57.9	135,419	114,902	58,473	54,997
	5 mos.	50	1,859,150	.....	1,883,731	173,820	176,286	39,015	472,017	43,158	904,176	48.0	979,555	826,109	466,125	586,044
Detroit Terminal	May	19	.....	.....	140,198	24,430	13,016	.....	62,486	4,416	104,348	74.4	35,850	19,727	21,276	80,136
	5 mos.	19	.....	.....	695,991	78,175	69,097	49	340,173	24,508	512,002	73.6	183,989	102,743	105,938	369,167
Detroit, Toledo & Ironton	May	501	1,112,671	1,540	1,140,805	161,266	124,069	13,044	269,630	35,156	599,267	52.5	541,538	483,794	444,268	441,876
	5 mos.	505	5,558,360	8,343	5,649,115	696,381	559,963	68,204	1,366,965	172,834	2,859,059	50.6	2,790,056	2,464,179	2,242,076	2,322,977
Duluth, Missabe & Northern	May	567	3,136,990	6,651	3,545,869	376,431	352,070	3,956	539,681	52,724	1,324,854	37.4	2,221,015	1,933,527	1,930,187	2,535,249
	5 mos.	567	3,751,796	32,291	4,283,578	1,105,730	1,599,959	21,210	1,375,001	229,087	4,330,957	101.1	—47,379	—764,305	—740,964	918,003
Duluth, Winnipeg & Pacific	May	178	128,663	8,933	146,353	34,221	25,105	5,686	63,181	8,235	138,731	94.8	7,622	—423	2,468	—1,776
	5 mos.	178	759,564	46,213	843,250	143,376	183,308	26,277	357,851	38,978	763,925	90.6	79,325	35,402	33,812	142,334
Elgin, Joliet & Eastern	May	452	1,940,763	2,256	2,149,923	254,980	423,573	17,067	769,923	52,320	1,514,553	70.4	635,370	533,706	354,450	624,550
	5 mos.	452	9,414,125	2,291	10,352,807	1,076,178	2,025,316	79,475	3,833,248	268,360	7,277,749	70.3	3,075,058	2,481,280	1,551,041	2,452,810
Erie Railroad	May	2,046	6,676,209	799,557	8,234,955	1,114,527	1,898,225	185,999	3,098,394	293,504	6,630,817	80.5	1,604,138	1,205,794	1,124,028	1,893,974
	5 mos.	2,046	32,617,483	3,817,716	39,926,262	4,619,345	9,602,045	915,999	16,007,843	1,525,562	32,864,811	82.3	7,061,451	5,066,514	4,696,547	7,685,435
Chicago & Erie	May	269	1,114,697	54,710	1,266,047	149,076	145,425	30,269	334,733	43,098	700,529	55.3	565,518	507,325	237,238	198,953
	5 mos.	269	5,212,071	248,275	5,893,812	620,934	661,772	152,486	1,789,033	224,364	3,445,493	58.5	2,448,319	2,157,378	786,532	1,224,816
New Jersey & New York	May	45	24,861	92,984	123,035	16,677	21,494	1,713	61,979	3,839	105,702	85.9	17,333	12,993	—17,217	—22,538
	5 mos.	45	114,854	454,448	593,158	68,645	115,325	8,684	323,837	18,573	535,026	90.2	58,132	36,413	—118,691	—126,176
N. Y., Susquehanna & Western	May	131	334,146	40,227	413,957	53,635	46,277	5,184	161,163	11,593	277,853	67.1	136,104	104,548	80,277	58,505
	5 mos.	131	1,540,828	194,778	1,930,673	230,981	239,256	25,561	867,858	62,014	1,425,520	73.8	505,153	347,372	213,244	272,216
Florida East Coast	May	863	789,137	178,014	1,110,972	161,540	222,263	27,041	319,726	46,183	786,270	70.8	324,702	202,166	114,690	107,296
	5 mos.	863	3,686,279	2,552,504	7,159,125	806,401	1,032,434	164,858	1,883,572	221,226	4,233,643	59.1	2,925,482	2,281,900	1,887,596	2,456,037

Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Fort Smith & Western	May	249	$80,876	$6,416	$93,820	$20,737	$20,846	$5,708	$35,892	$6,406	$88,296	94.1	$5,524	$1,423	—$9,168	—$10,001
	5 mos.	249	487,621	36,047	558,394	107,966	117,801	29,022	203,222	33,409	487,448	87.3	70,946	48,433	—5,790	8,824
Galveston Wharf	May	13	.....	.....	99,263	30,792	6,479	3,450	25,964	6,456	83,600	84.2	15,663	—9,337	—9,309	14,957
	5 mos.	13	.....	.....	613,671	182,368	31,035	19,482	135,814	31,236	462,936	75.4	150,735	25,735	27,226	242,275
Georgia R. R.	May	328	320,331	41,791	393,795	53,579	84,226	22,580	176,288	23,315	359,618	91.3	34,177	25,489	37,592	72,980
	5 mos.	328	1,633,457	213,189	2,001,134	230,815	407,530	113,676	881,830	114,392	1,747,120	87.3	254,014	209,422	273,961	385,423
Georgia & Florida	May	501	103,714	4,133	115,052	34,690	21,776	10,708	46,603	7,713	121,693	105.8	—6,641	—15,417	—13,275	1,746
	5 mos.	501	550,378	32,117	621,580	146,226	108,448	49,415	255,460	39,502	600,153	96.6	21,427	—25,200	—25,402	21,095
Grand Trunk Western	May	1,019	2,321,539	153,525	2,635,591	512,781	444,041	79,802	1,007,394	106,475	2,154,975	81.8	480,616	320,343	129,200	590,030
	5 mos.	1,019	11,000,739	759,695	12,585,657	1,529,908	2,310,207	369,933	5,043,396	527,458	9,847,160	78.2	2,738,497	2,027,737	1,226,979	3,308,088
Atlantic & St. Lawrence	May	166	125,741	19,012	165,478	24,369	41,298	6,854	80,835	8,408	163,189	98.6	2,289	—11,991	—57,127	—104,091
	5 mos.	166	719,907	109,618	916,807	131,692	226,353	31,174	472,951	43,464	913,241	99.6	3,566	—68,466	—341,140	—457,306
Great Northern	May	8,366	7,165,798	679,607	8,754,775	2,084,609	1,551,070	287,498	2,790,648	241,695	7,031,650	80.3	1,723,125	967,863	908,484	2,744,479
	5 mos.	8,366	29,095,490	3,739,499	36,602,713	6,507,955	7,971,039	1,302,132	13,819,020	1,213,944	31,160,593	85.1	5,442,120	1,965,681	1,582,869	7,876,945
Green Bay & Western	May	234	169,011	2,260	176,480	28,559	21,731	7,175	61,068	3,204	121,737	68.9	54,743	44,683	37,761	41,842
	5 mos.	234	712,427	14,545	750,471	108,340	111,366	30,456	281,994	14,848	546,721	72.8	203,750	159,690	134,833	97,580
Gulf & Ship Island	May	307	137,667	22,508	182,507	50,706	34,060	4,729	85,626	6,537	184,408	101.0	—1,901	—34,005	—47,704	—26,164
	5 mos.	307	956,978	154,155	1,268,200	245,911	226,370	24,192	493,810	35,281	1,042,344	82.2	225,856	65,088	—2,797	3,730
Gulf, Mobile & Northern	May	733	517,176	20,871	560,366	104,280	78,907	33,076	171,235	26,651	414,342	73.94	146,024	111,477	76,187	89,854
	5 mos.	733	2,418,994	121,053	2,654,158	456,033	460,596	164,396	856,805	143,481	2,082,859	79.69	571,299	415,490	254,888	474,694
Illinois Central	May	5,018	8,396,998	1,370,628	10,949,209	1,351,693	2,584,741	265,120	4,095,534	371,334	8,747,363	79.9	2,201,846	1,493,741	1,430,603	1,717,487
	5 mos.	5,018	43,009,801	7,830,050	55,751,830	6,738,479	13,033,938	1,358,000	21,075,841	1,844,293	44,491,178	79.8	11,260,652	7,457,558	7,220,910	10,697,018
Yazoo & Mississippi Valley	May	1,705	1,582,685	227,448	1,959,094	315,191	358,697	45,560	842,480	66,365	1,635,236	83.5	323,858	156,784	35,140	64,032
	5 mos.	1,705	8,595,994	1,210,162	10,477,532	1,559,624	1,826,366	226,496	4,109,860	331,138	8,066,531	77.0	2,411,001	1,572,564	1,087,789	663,054
Illinois Central System	May	6,724	9,979,683	1,598,076	12,908,304	1,666,884	2,950,586	310,680	4,938,024	437,809	10,389,867	80.5	2,518,437	1,642,425	1,457,643	1,779,882
	5 mos.	6,724	51,655,874	9,056,473	66,295,706	8,298,103	14,882,180	1,584,496	25,220,389	2,175,987	52,614,829	79.4	13,680,877	9,034,836	8,313,413	11,362,428
Illinois Terminal	May	477	478,796	98,508	608,403	82,147	81,973	19,626	181,551	39,270	403,528	66.33	204,875	180,932	142,226	158,774
	5 mos.	477	2,202,254	543,659	2,880,309	318,683	385,535	90,056	1,028,741	188,017	2,004,768	69.60	875,541	755,521	551,522	586,830
Kansas City Southern	May	784	1,304,006	68,771	1,539,285	180,686	260,187	63,578	439,084	83,846	1,030,871	67.0	508,414	394,350	332,943	368,233
	5 mos.	784	6,043,984	352,137	7,114,140	786,464	1,241,857	313,809	2,181,759	408,236	4,950,111	69.6	2,164,029	1,594,727	1,312,024	1,456,027
Texarkana & Ft. Smith	May	99	192,272	5,516	214,765	26,839	13,573	8,537	57,368	11,263	120,729	56.2	94,036	78,370	38,908	70,314
	5 mos.	99	912,220	27,881	1,037,301	141,674	116,020	42,830	281,305	60,538	653,789	63.0	383,512	305,072	163,411	412,541
Kansas, Oklahoma & Gulf	May	326	224,403	1,953	230,657	38,206	23,358	14,871	59,689	11,315	147,001	63.7	83,656	62,942	46,590	127,692
	5 mos.	326	1,255,113	10,725	1,289,748	135,035	116,315	78,976	322,344	54,533	706,321	54.8	583,427	479,277	374,739	498,582
Lake Superior & Ishpeming	May	160	270,748	525	316,538	41,491	25,771	586	55,357	6,594	129,799	41.0	186,739	101,251	99,270	229,845
	5 mos.	160	513,331	5,664	584,477	133,341	140,998	2,851	189,412	31,753	498,355	85.3	86,122	—51,018	—67,827	226,948
Lake Terminal	May	12	.....	.....	108,984	12,019	12,681	.....	46,762	2,983	74,445	68.3	34,539	28,114	21,850	43,824
	5 mos.	12	.....	.....	344,260	65,351	59,714	.....	194,607	12,124	331,796	96.4	12,464	—19,661	—41,667	19,849
Lehigh & Hudson River	May	96	196,485	836	208,399	25,564	33,075	3,727	68,597	13,803	144,766	69.5	63,633	47,817	30,491	33,637
	5 mos.	96	893,309	5,078	952,060	137,403	161,583	18,091	350,083	52,224	719,384	75.6	232,676	170,566	92,536	150,098
Lehigh & New England	May	216	460,908	761	468,462	63,080	87,530	13,408	149,472	23,769	337,259	72.0	131,203	114,184	106,003	123,385
	5 mos.	216	1,965,902	4,232	1,996,454	252,377	424,194	38,444	731,692	95,296	1,542,003	77.2	454,451	390,778	379,290	358,374
Lehigh Valley	May	1,361	4,653,483	448,325	5,548,643	598,499	1,004,266	147,964	2,185,049	139,205	4,102,041	73.9	1,446,602	1,091,354	992,196	1,412,369
	5 mos.	1,361	21,073,980	2,305,164	25,457,231	2,121,657	5,839,427	719,582	11,041,803	734,254	20,598,010	80.9	4,859,221	3,406,184	2,916,833	4,810,979
Louisiana & Arkansas	May	608	546,843	18,217	593,943	79,891	93,240	21,253	189,864	27,132	411,027	69.2	182,916	131,528	83,819	74,400
	5 mos.	630	2,868,809	99,271	3,093,848	451,099	547,699	104,631	939,850	123,328	2,163,839	69.9	930,009	697,448	465,143	473,577
Louisiana, Arkansas & Texas	May	202	58,063	1,403	62,460	31,014	12,889	3,613	30,812	5,279	83,607	133.9	—21,147	—25,147	—34,737	—16,549
	5 mos.	204	372,930	10,017	398,296	119,979	80,907	14,920	190,790	26,927	433,949	109.0	—35,653	—55,734	—120,317	—107,879
Louisville & Nashville	May	5,244	8,239,898	1,004,473	9,949,312	1,607,866	2,450,091	250,802	3,592,883	375,517	8,316,067	83.6	1,633,245	1,104,519	1,110,411	1,556,164
	5 mos.	5,248	40,871,217	5,494,063	49,556,130	8,013,231	12,621,832	1,287,560	18,112,368	1,851,071	42,133,357	85.0	7,422,773	4,868,104	5,000,772	7,310,614
Maine Central	May	1,121	1,334,228	197,238	1,686,910	324,993	299,494	22,189	590,316	50,763	1,288,732	76.4	398,178	300,662	218,927	250,671
	5 mos.	1,121	6,638,496	1,057,833	8,350,527	1,212,504	1,526,053	84,194	3,131,445	254,923	6,213,524	74.4	2,137,003	1,654,064	1,318,295	1,115,582
Midland Valley	May	363	212,110	5,556	224,861	45,800	28,698	5,632	60,630	12,630	152,817	68.0	72,044	57,450	43,532	54,098
	5 mos.	363	1,139,050	32,803	1,210,415	158,098	168,394	27,738	329,793	61,401	741,600	61.3	468,815	396,201	319,047	385,059
Minneapolis & St. Louis	May	1,627	921,466	45,312	1,033,107	218,352	208,060	39,432	471,946	43,517	981,116	95.0	51,991	—9,515	—67,300	—8,971
	5 mos.	1,627	4,381,899	261,076	4,958,714	674,210	1,075,662	190,886	2,435,177	221,151	4,596,467	92.7	362,247	55,553	—172,992	55,334
Minn., St. Paul & S. S. Marie	May	4,411	2,894,688	245,517	3,444,499	623,024	671,272	86,216	1,260,164	127,199	2,781,758	80.8	662,741	427,241	273,933	965,494
	5 mos.	4,411	12,712,886	1,291,910	15,262,254	2,461,928	3,453,141	402,945	6,368,403	642,458	13,397,094	87.8	1,865,160	735,966	45,965	2,058,276
Duluth, South Shore & Atlantic	May	573	306,261	27,852	366,106	87,751	65,301	8,290	141,779	10,198	315,013	86.0	51,093	16,093	7,368	33,286
	5 mos.	573	1,431,277	178,184	1,720,473	261,314	331,274	41,778	740,441	52,807	1,438,010	83.6	282,463	123,117	59,740	140,562

Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Spokane International	May	165	$66,717	$4,729	$77,940	$15,547	$7,812	$3,384	$27,244	$6,251	$61,153	78.5	$16,787	$11,703	$6,064	$14,184
	5 mos.	165	314,684	31,526	375,555	83,515	38,518	17,720	143,376	31,171	318,989	84.9	56,566	31,074	5,246	59,637
Mississippi Central	May	150	95,172	4,129	103,761	18,350	22,324	9,632	31,740	8,536	90,582	87.3	13,179	8,008	7,889	29,785
	5 mos.	150	557,530	25,036	603,306	88,629	123,450	50,178	171,612	42,759	476,628	79.0	126,678	90,463	92,571	150,263
Missouri & North Arkansas	May	364	117,915	5,793	132,427	38,873	19,980	8,753	50,819	5,937	124,387	93.9	8,040	5,614	—6,465	1,019
	5 mos.	364	662,698	32,202	735,528	153,002	80,073	47,687	279,075	39,373	600,129	81.6	135,399	123,198	53,348	—291
Missouri-Illinois	May	202	161,497	1,333	166,209	31,187	37,625	3,318	49,619	7,435	129,126	77.7	37,083	30,277	19,415	64,236
	5 mos.	202	748,804	9,208	775,626	123,454	168,345	17,790	233,479	34,381	576,370	74.4	198,656	167,250	126,629	180,982
Missouri-Kansas-Texas Lines	May	3,188	2,699,810	424,001	3,485,254	552,188	650,923	128,028	1,168,261	171,409	2,678,528	76.9	806,726	601,145	412,676	590,817
	5 mos.	3,188	14,083,010	2,225,042	17,936,951	2,480,349	3,346,254	616,978	6,082,065	871,434	13,451,654	75.0	4,485,297	3,396,081	2,341,016	3,890,169
Missouri Pacific	May	7,452	8,167,732	829,606	9,911,661	1,624,258	1,752,236	308,285	3,496,953	392,845	7,560,005	76.3	2,351,656	1,912,080	1,486,067	1,423,353
	5 mos.	7,452	41,608,198	4,637,423	50,606,345	7,494,481	8,902,190	1,544,611	18,468,393	1,977,727	38,379,726	75.8	12,226,619	10,010,973	7,920,588	8,009,157
Gulf Coast Lines	May	1,026	1,357,704	107,887	1,567,624	301,602	266,463	45,346	366,510	65,531	1,037,651	66.19	529,973	481,462	363,990	226,807
	5 mos.	1,026	6,700,890	670,085	7,814,540	1,238,482	1,211,441	236,531	2,029,492	320,317	5,000,416	63.99	2,814,124	2,571,593	1,933,395	1,307,594
International Great Northern	May	1,159	1,022,475	131,288	1,273,629	203,183	241,986	42,120	554,635	73,388	1,113,057	87.39	160,572	117,359	13,604	142,902
	5 mos.	1,159	4,983,172	737,927	6,392,554	1,061,271	1,229,723	225,952	2,743,941	359,563	5,645,581	88.31	746,973	529,917	32,600	644,721
San Antonio, Uvalde & Gulf	May	318	140,702	15,371	177,330	38,884	26,558	6,053	46,636	7,742	124,436	70.2	52,894	48,196	21,277	20,238
	5 mos.	318	656,260	79,063	812,587	200,289	91,236	30,969	199,288	39,135	555,305	68.3	257,282	233,333	98,280	135,372
Mobile & Ohio	May	1,159	1,120,250	60,938	1,261,301	210,042	269,008	55,601	477,727	50,130	1,059,823	84.0	201,478	118,598	42,278	177,415
	5 mos.	1,159	5,611,721	337,466	6,306,602	926,803	1,201,140	283,772	2,421,958	254,722	5,073,649	80.4	1,232,953	802,947	488,317	912,401
Monongahela	May	177	543,721	4,360	552,927	80,000	70,000	1,389	140,167	10,742	300,951	54.4	251,976	232,279	130,418	199,460
	5 mos.	178	2,633,428	33,792	2,689,521	400,000	350,000	6,516	726,464	54,464	1,534,336	57.0	1,155,185	1,069,353	557,808	844,359
Monongahela Connecting	May	6	.....	.....	192,149	25,008	38,839	300	81,258	2,781	148,186	77.1	43,963	34,825	25,855	53,037
	5 mos.	6	.....	.....	912,918	106,161	171,045	1,527	404,152	14,071	696,956	76.3	215,962	171,262	127,104	236,638
Montour	May	57	258,376	.....	259,212	37,171	54,072	1,493	56,225	8,849	157,810	60.9	101,402	99,627	105,418	83,565
	5 mos.	57	990,893	150	993,359	110,032	260,804	6,924	266,206	39,003	682,969	68.8	310,390	301,515	356,345	304,807
Nash., Chatt. & St. Louis	May	1,203	1,307,351	177,153	1,644,194	302,110	371,066	80,806	677,960	78,842	1,509,775	91.8	134,419	85,362	68,440	346,349
	5 mos.	1,203	6,815,453	1,030,484	8,615,725	1,302,151	1,825,865	428,468	3,316,912	402,782	7,306,783	84.8	1,308,942	983,844	960,258	2,067,432
Nevada Northern	May	165	56,325	2,796	66,863	13,923	5,343	1,008	14,647	5,937	40,879	61.1	25,984	14,129	15,220	70,677
	5 mos.	165	298,095	17,161	352,724	63,036	31,265	5,169	76,633	22,982	199,382	56.5	153,342	106,801	107,731	297,831
Newburgh & South Shore	May	6	.....	.....	139,403	19,251	26,143	.....	57,908	5,662	108,964	78.2	30,439	14,418	14,145	55,174
	5 mos.	6	.....	.....	603,790	25,830	1,263	.....	285,491	30,977	343,561	56.9	260,229	180,125	195,602	146,937
New Orleans Great Northern	May	264	254,630	13,492	275,927	30,249	44,249	14,528	79,902	11,030	179,972	65.2	95,955	79,817	43,282	30,768
	5 mos.	271	1,205,578	66,352	1,310,256	146,661	226,518	55,645	404,810	53,007	884,259	67.5	425,997	348,409	173,233	178,178
New Orleans Terminal	May	20	4,258	.....	159,866	25,602	16,506	.....	64,485	1,674	108,267	67.7	51,599	40,341	54,242	57,414
	5 mos.	20	10,832	.....	697,678	101,562	64,665	.....	285,739	8,568	460,534	66.0	237,144	180,856	180,187	252,423
New York Central	May	11,477	27,715,861	9,264,301	42,537,678	5,826,772	9,177,244	800,148	14,875,302	1,398,385	32,737,442	77.0	9,800,236	6,663,020	5,850,771	10,009,703
	5 mos.	11,477	135,325,538	46,307,322	207,071,153	25,431,941	46,715,897	4,045,974	76,219,229	7,044,385	162,895,898	78.7	44,175,255	29,416,716	25,796,195	41,380,251
Indiana Harbor Belt	May	120	.....	.....	960,332	80,000	104,000	5,209	365,103	28,362	596,369	62.1	363,963	299,255	267,511	322,817
	5 mos.	120	.....	.....	4,725,112	440,000	560,000	25,399	2,052,976	147,952	3,309,405	70.0	1,415,707	1,153,294	1,012,939	1,222,784
Pittsburgh & Lake Erie	May	231	2,350,500	145,044	2,572,880	274,035	741,184	36,604	811,499	79,674	1,953,629	75.9	619,251	449,251	763,592	797,609
	5 mos.	231	10,711,592	793,314	11,894,575	1,288,267	3,621,274	192,831	4,082,518	391,772	9,631,503	81.0	2,263,072	1,467,850	2,896,581	3,180,819
New York, Chicago & St. Louis	May	1,690	3,707,285	174,004	4,044,583	569,159	789,065	132,567	1,453,224	132,646	3,077,842	76.1	966,741	751,372	538,048	848,359
	5 mos.	1,690	18,952,864	775,434	20,479,506	2,568,167	4,014,756	676,004	7,680,864	700,111	15,577,278	76.1	4,902,228	3,908,651	2,770,918	4,513,434
N. Y., New Haven & Hartford	May	2,132	5,744,110	3,470,149	10,519,643	1,710,317	1,576,480	110,075	3,155,930	322,494	7,066,313	67.2	3,453,330	2,767,426	2,115,747	2,527,197
	5 mos.	2,133	26,919,227	17,724,913	50,628,395	6,776,969	8,010,750	517,144	16,620,556	1,619,592	34,520,799	68.2	16,107,596	12,671,502	9,821,477	11,358,188
New York Connecting	May	20	191,723	.....	222,544	28,054	11,870	.....	35,602	1,436	76,962	34.6	145,582	108,582	86,422	118,921
	5 mos.	20	971,411	.....	1,104,069	92,847	53,849	.....	169,982	9,537	326,215	29.6	777,854	588,854	455,421	408,566
New York, Ontario & Western	May	568	615,070	93,931	867,782	132,263	191,470	16,304	371,206	28,334	744,085	85.7	123,697	81,185	33,414	—4,033
	5 mos.	568	3,115,723	276,609	4,111,775	536,871	909,523	87,067	1,944,135	161,875	3,666,671	89.2	445,104	232,221	21,328	—48,343
Norfolk & Western	May	2,240	7,894,145	321,866	8,510,836	1,109,720	1,504,836	135,862	2,033,063	245,270	5,029,049	59.1	3,481,787	2,681,274	2,885,800	3,865,101
	5 mos.	2,240	39,584,934	1,702,561	42,846,304	5,548,522	8,356,842	639,857	10,465,383	1,262,957	26,356,907	61.5	16,489,397	12,087,125	13,093,539	15,311,631
Norfolk Southern	May	932	494,586	21,868	547,657	94,569	90,212	32,364	234,352	27,497	478,884	87.4	68,773	46,434	1,222	81,457
	5 mos.	932	2,606,664	109,697	2,887,944	415,139	463,156	147,275	1,175,452	139,552	2,337,817	81.0	350,127	287,659	209,438	498,222
Northern Pacific	May	6,783	5,325,941	674,022	6,667,880	1,377,788	1,360,839	311,050	2,338,003	256,605	5,756,600	86.3	911,182	218,702	560,189	1,411,064
	5 mos.	6,783	24,887,447	2,990,856	31,000,135	4,892,784	7,348,874	1,188,836	12,112,219	1,300,791	27,354,797	88.2	3,645,338	259,791	1,902,341	6,062,176
Northwestern Pacific	May	441	302,235	140,330	485,027	136,313	76,066	8,318	208,277	18,390	446,844	92.1	38,183	2,243	—2,800	73,597
	5 mos.	461	1,267,252	602,222	2,065,839	582,304	460,210	39,109	1,010,848	85,499	2,175,458	105.3	—109,619	—290,704	—313,042	—208,873
Oklahoma City-Ada-Atoka	May	129	51,264	5,461	59,539	19,649	6,941	1,175	23,119	4,469	55,333	92.9	4,206	100	—13,826	25,607
	5 mos.	129	349,896	29,102	397,905	123,458	46,070	6,710	141,205	20,204	334,471	84.1	63,434	42,108	—27,370	—1,021

Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Pennsylvania R. R.	May	10,511	$36,337,349	$9,490,065	$51,209,581	$6,229,720	$9,693,784	$850,179	$17,998,157	$1,662,660	$37,039,512	72.3	$14,170,069	$10,689,742	$9,393,964	$13,158,749
	5 mos.	10,511	169,645,591	49,088,355	242,916,774	29,246,569	49,239,438	4,500,345	90,385,868	8,517,717	185,008,980	76.2	57,907,794	44,006,022	38,186,388	52,783,591
Long Island	May	404	862,450	2,306,202	3,346,650	454,867	465,799	15,849	1,259,941	59,498	2,256,980	67.4	1,089,670	802,990	632,246	772,092
	5 mos.	404	4,168,890	10,142,593	15,124,693	2,107,408	2,324,945	117,613	6,470,809	338,222	11,361,755	75.1	3,762,938	2,944,584	2,202,931	2,701,924
West Jersey & Seashore	May	369	393,649	254,142	685,861	102,151	89,390	4,543	313,132	16,728	528,937	77.1	156,924	73,504	47,203	92,982
	5 mos.	369	1,875,689	1,246,186	3,286,798	463,149	445,853	21,417	1,596,788	80,461	2,621,346	79.8	665,452	453,447	327,568	495,536
Peoria & Pekin Union	May	19	15,991	1,084	139,470	34,658	16,379	5,702	64,558	8,037	129,334	92.7	10,136	—6,114	13,578	37,626
	5 mos.	19	76,639	5,352	716,082	114,770	77,879	26,166	328,063	41,740	588,618	82.2	127,464	42,885	133,857	195,453
Pere Marquette	May	2,241	2,979,704	168,903	3,365,448	552,815	676,373	76,209	1,188,209	116,546	2,605,773	77.4	759,675	574,478	382,506	533,623
	5 mos.	2,241	14,497,196	883,575	16,311,125	2,358,387	3,572,069	378,321	6,083,950	586,211	13,000,188	79.7	3,310,937	2,591,593	1,747,789	3,906,127
Pittsburgh & Shawmut	May	102	95,440	3,659	101,498	13,994	22,174	1,474	30,233	6,645	74,520	73.4	26,978	25,611	28,730	29,965
	5 mos.	102	507,943	23,305	538,872	71,179	126,285	8,189	162,872	35,217	403,742	75.7	135,130	128,550	142,868	190,917
Pittsburgh & West Virginia	May	92	335,031	3,329	365,088	28,631	78,395	21,074	61,735	22,225	221,487	60.7	143,601	108,066	184,390	233,563
	5 mos.	92	1,474,283	16,098	1,633,090	125,014	381,705	101,211	312,764	98,305	1,067,995	65.4	565,095	422,528	670,626	1,109,996
Pittsburgh, Shawmut & Northern	May	198	135,806	905	140,440	36,521	27,256	1,865	44,963	6,123	116,728	83.1	23,712	20,880	11,592	24,235
	5 mos.	198	683,817	5,638	707,178	126,548	135,819	9,163	235,895	32,856	540,281	76.4	166,897	152,509	116,135	149,814
Quincy, Omaha & Kansas City	May	249	43,885	5,582	56,062	27,460	6,945	868	25,500	2,434	63,306	112.9	—7,244	—11,943	—14,408	—19,353
	5 mos.	249	200,252	31,377	261,724	100,937	30,276	4,248	125,221	13,284	273,276	104.4	—11,552	—35,031	—46,868	—65,889
Reading	May	1,462	6,716,295	498,828	7,747,603	1,100,880	1,846,213	96,388	2,859,604	213,703	6,144,433	79.3	1,603,170	1,286,585	1,301,601	1,433,538
	5 mos.	1,461	32,421,731	2,691,233	37,397,829	5,528,241	9,361,279	479,028	14,482,645	1,118,010	31,096,075	83.1	6,301,754	4,881,096	4,881,151	7,045,251
Atlantic City	May	163	108,215	90,841	217,271	77,309	20,743	4,339	158,296	3,715	264,554	121.8	—47,283	—87,283	—104,427	—95,039
	5 mos.	163	576,046	366,427	1,027,881	374,396	104,955	17,514	785,417	24,025	1,307,024	127.2	—279,143	—479,147	—558,543	—564,638
Richmond, Fredericksburg & Potomac	May	117	532,477	222,711	941,101	176,462	163,644	12,913	317,802	36,847	732,493	77.8	208,608	163,608	104,972	178,404
	5 mos.	117	2,385,350	1,727,474	5,103,498	681,106	891,249	54,468	1,734,000	188,433	3,707,294	72.6	1,396,204	1,138,811	800,043	1,310,884
Rutland	May	413	302,541	61,481	466,365	71,158	84,592	11,820	187,693	16,019	373,067	80.0	93,298	67,280	71,944	102,176
	5 mos.	413	1,354,921	382,295	2,205,598	362,544	474,550	57,784	925,129	84,341	1,911,962	86.7	293,629	186,119	225,678	335,767
St. Louis-San Francisco	May	5,314	4,559,578	722,789	5,854,027	785,288	1,181,635	126,247	2,077,405	228,668	4,339,043	74.12	1,514,984	1,130,729	1,148,988	1,603,577
	5 mos.	5,314	23,924,914	3,696,468	30,186,658	3,735,413	5,884,017	639,268	10,847,143	1,167,928	22,117,900	73.27	8,068,758	6,399,423	6,452,423	7,435,508
Ft. Worth & Rio Grande	May	233	62,625	4,315	74,676	23,950	17,345	3,195	39,504	4,591	88,589	118.6	—13,913	—18,325	—28,234	—19,132
	5 mos.	233	286,666	22,559	354,162	106,265	79,616	15,426	200,714	22,853	423,803	119.7	—69,641	—92,209	—135,943	—65,477
St. Louis-San Francisco & Texas	May	154	117,478	7,890	129,755	24,432	22,631	5,608	51,328	7,966	109,643	84.5	20,112	17,164	—9,487	—13,207
	5 mos.	154	567,198	47,376	640,774	101,379	107,968	28,768	266,171	40,506	542,571	84.7	98,203	82,716	—53,787	—4,551
St. Louis Southwestern Lines	May	1,816	1,620,044	80,269	1,853,881	188,079	259,999	112,345	698,741	98,511	1,367,874	73.8	486,007	389,834	223,852	208,159
	5 mos.	1,816	8,638,357	397,605	9,776,482	1,381,790	1,623,205	547,005	3,444,429	493,470	7,567,407	77.4	2,209,075	1,756,381	1,074,326	1,113,708
San Diego & Arizona	May	155	97,556	8,452	108,405	18,171	17,188	3,500	25,811	8,013	74,045	68.3	34,360	28,882	28,987	20,491
	5 mos.	155	414,054	97,418	522,870	84,290	84,838	19,976	136,715	41,005	373,656	71.5	149,214	122,245	124,568	141,349
Seaboard Air Line	May	4,493	3,261,715	386,304	4,057,074	528,732	774,786	197,038	1,548,442	176,409	3,260,629	80.4	796,445	469,393	411,153	1,089,612
	5 mos.	4,500	17,890,876	3,206,516	23,419,136	3,120,427	4,013,694	1,039,532	8,483,641	900,994	17,843,276	76.2	5,575,860	3,867,077	3,322,818	5,184,752
Southern Ry.	May	6,731	7,988,239	1,459,,118	10,337,450	1,531,760	2,099,306	245,652	3,561,975	374,504	7,890,768	76.3	2,446,682	1,705,411	1,499,716	2,390,557
	5 mos.	6,731	40,617,522	7,636,283	52,638,265	8,344,111	10,372,784	1,215,486	18,535,836	1,865,904	40,734,119	77.4	11,904,146	8,071,380	7,256,232	11,736,797
Alabama Great Southern	May	314	580,391	98,472	732,169	128,187	175,374	20,071	228,777	24,614	583,155	79.6	149,014	97,665	106,759	220,452
	5 mos.	314	2,861,838	505,585	3,624,871	662,407	829,612	100,469	1,138,213	123,389	2,884,801	79.6	740,070	477,560	551,301	1,021,477
Cinn., New Orleans & Tex. Pacific	May	338	1,353,045	155,047	1,612,150	280,219	382,722	43,908	460,826	52,934	1,230,441	76.3	381,709	300,440	265,848	553,757
	5 mos.	338	6,704,921	1,021,724	8,204,204	1,418,183	1,834,195	205,214	2,410,949	268,272	6,201,446	75.6	2,002,758	1,553,376	1,510,878	987,064
Georgia Southern & Florida	May	397	233,286	46,602	302,028	65,725	74,493	2,811	110,868	2,477	260,395	86.2	41,633	17,556	244	68,615
	5 mos.	397	1,124,297	465,953	1,729,528	341,089	367,883	12,025	621,123	14,421	1,392,784	80.5	336,744	211,448	171,923	181,352
New Orleans & Northeastern	May	204	323,411	47,431	397,252	54,716	80,601	11,054	115,173	15,133	280,268	70.6	116,984	74,960	61,121	64,579
	5 mos.	204	1,551,137	257,606	1,934,442	309,757	359,923	55,826	605,695	71,580	1,420,591	73.4	513,851	295,903	131,759	379,951
Northern Alabama	May	110	74,560	3,428	80,950	15,910	3,506	2,387	27,939	2,865	52,607	65.0	28,343	22,309	1,396	15,857
	5 mos.	110	441,377	19,093	475,828	104,820	18,101	11,645	152,051	15,491	302,108	63.5	173,720	145,068	43,952	96,417
Southern Pacific	May	9,121	11,853,832	2,871,532	16,176,250	2,213,374	2,783,589	445,401	5,456,911	667,128	11,827,958	73.1	4,348,292	3,123,286	2,626,594	4,061,239
	5 mos.	9,122	56,111,279	14,688,332	77,547,289	10,420,629	14,568,265	2,190,522	26,620,903	3,411,524	58,527,855	75.5	19,019,434	12,782,767	10,958,824	17,030,604
So. Pacific Steamship Lines	May	....	602,280	46,231	686,078	16,704	173,988	20,526	476,165	36,716	724,099	105.5	—38,021	—39,329	—37,807	—20,665
	5 mos.	....	2,958,194	209,941	3,385,741	92,661	872,248	113,135	2,402,338	227,160	3,707,542	109.5	—321,801	—328,746	—312,402	111,370
Texas & New Orleans	May	4,721	4,009,572	682,159	5,079,291	823,348	1,108,107	191,221	1,762,922	267,758	4,157,198	81.8	922,093	621,500	329,723	866,417
	5 mos.	4,721	20,026,817	3,728,272	25,834,891	4,586,581	5,369,993	888,628	8,921,151	1,319,004	21,122,935	81.8	4,711,956	3,184,834	1,850,942	3,985,169
Spokane, Portland & Seattle	May	554	535,280	69,453	661,051	113,794	89,797	12,561	217,064	23,568	462,788	70.0	198,263	110,882	95,368	133,340
	5 mos.	554	2,535,845	338,719	3,163,281	410,830	510,477	59,568	1,088,964	117,472	2,245,177	71.0	918,014	482,258	412,887	727,376
Tennessee Central	May	296	233,659	10,971	257,134	38,685	35,221	9,612	96,550	13,738	193,049	75.1	64,085	58,553	42,296	50,945
	5 mos.	296	1,137,717	52,621	1,258,589	271,527	227,593	46,671	465,549	70,474	1,078,974	85.7	179,615	152,478	68,741	113,752

Revenues and Expenses of Railways

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Terminal R. R. Assn. of St. Louis	May	55	.....	.....	$917,353	$133,185	$93,352	$2,900	$427,723	$26,086	$686,570	74.8	$230,783	$120,430	$208,375	$325,714
	5 mos.	55	.....	.....	4,509,386	684,088	479,711	15,081	2,149,244	138,499	3,484,407	77.3	1,024,979	593,247	1,038,975	1,524,213
Texas & Pacific	May	1,955	$2,586,339	$394,100	3,228,347	541,316	538,489	90,385	1,044,882	127,752	2,347,957	72.7	880,390	694,378	491,087	667,024
	5 mos.	1,955	13,097,972	1,989,302	16,267,646	2,427,411	2,730,340	444,487	5,301,033	640,691	11,551,439	71.0	4,716,207	3,787,507	2,777,832	3,295,263
Texas Mexican	May	162	98,022	3,585	111,450	17,963	18,758	528	41,591	10,975	88,738	79.6	22,712	17,699	5,505	8,869
	5 mos.	162	407,842	15,473	481,515	82,109	85,996	16,938	201,402	40,791	421,559	87.5	59,956	34,918	—6,950	52,514
Toledo, Peoria & Western	May	239	159,302	241	164,068	29,105	21,332	15,110	68,094	7,185	140,826	85.8	23,242	17,642	10,031	24,724
	5 mos.	239	806,451	1,564	827,169	100,928	134,697	73,257	344,281	44,477	697,622	84.3	129,547	105,459	57,328	192,867
Toledo Terminal	May	28	.....	.....	99,007	35,623	16,586	542	49,618	5,433	107,486	108.6	—8,479	—23,050	—3,328	48,400
	5 mos.	28	.....	.....	528,329	64,245	88,002	2,850	249,520	24,751	428,999	81.2	99,330	22,951	143,328	270,509
Trinity & Brazos Valley	May	367	105,538	4,251	116,425	131,775	38,037	6,484	69,483	12,664	237,449	203.9	—121,024	—129,558	—157,312	—82,291
	5 mos.	367	654,466	24,182	718,984	645,622	150,312	31,928	356,956	63,289	1,192,372	165.8	—473,388	—513,875	—647,948	—192,259
Ulster & Delaware	May	128	51,377	6,199	101,571	17,838	11,873	1,353	43,515	4,242	78,821	77.6	22,750	16,950	12,840	—3,783
	5 mos.	128	154,300	15,499	353,792	66,900	65,400	6,237	181,629	20,394	340,560	96.3	13,232	—9,168	—18,500	—30,637
Union R. R. of Penna.	May	45	.....	.....	892,982	125,254	172,337	139	339,883	14,930	652,327	73.1	240,655	218,655	281,718	494,564
	5 mos.	45	.....	.....	3.531,030	451,021	797,358	757	1,645,468	73,592	2,967,496	84.0	563,534	393,734	654,854	1,097,294
Union Pacific	May	3,765	6,092,025	1,124,666	8,055,975	1,022,787	1,866,841	254,943	2,334,509	347,168	5,995,128	74.4	2,060,847	1,403,559	1,243,611	1,767,591
	5 mos.	3,765	29,628,986	4,792,527	38,148,717	3,943,054	9,082,498	963,291	11,877,330	1,680,267	28,247,771	74.0	9,900,946	6,467,986	5,862,114	9,067,930
Oregon Short Line	May	2,538	2,014,864	231,679	2,461,059	576,704	433,123	68,650	758,564	126,768	2,006,617	81.5	454,442	139,148	64,879	314,131
	5 mos.	2,538	10,777,707	1,162,099	12,910,858	2,098,845	2,279,350	288,111	4,025,598	634,754	9,531,142	73.8	3,379,716	1,861,527	1,450,951	2,839,202
Oregon-Wash. R. R. & Nav.	May	2,364	1,538,341	179,569	1,908,804	415,114	303,816	88,244	733,298	119,611	1,677,058	87.9	231,746	40,561	—49,880	17,528
	5 mos.	2,364	7,746,008	889,520	9,574,887	1,783,317	1,560,620	388,320	3,866,202	619,910	8.320,986	86.9	1,253,901	295,650	—154,331	—158,982
Los Angeles & Salt Lake	May	1,229	1,439,251	340,510	1,965,127	320,712	337,531	99,590	627,826	87,530	1,542,311	78.5	422,816	267,808	152,719	339,885
	5 mos.	1,229	7,303,484	1,450,192	9,620,975	1,553,360	1,664.164	431,642	3,116,531	424,205	7,512,700	78.1	2,108,275	1,287,337	669,838	1,711,547
St. Joseph & Grand Island	May	258	234,622	8,808	257,598	56,107	36,298	3,480	94,856	16,662	209,051	81.2	48,547	35,032	13,103	33,541
	5 mos.	258	1,300,853	38,705	1,398,434	203,046	174,976	17,652	484,112	80,174	970,182	69.4	428,252	336,504	238,141	283,027
Utah	May	111	75,079	.....	75,144	21,202	27,794	333	20,469	5,890	75,688	100.7	—544	1,723	—7,138	18,132
	5 mos.	111	687,851	.....	691,927	110,333	177,941	1,777	176,000	30,816	496,867	71.8	195,060	156,097	76,748	275,452
Virginian	May	545	1,251,578	17,831	1,351,149	193,061	263,515	13,979	300,940	32,942	802,833	59.4	548,316	408,307	460,749	760,895
	5 mos.	545	7,004,171	119,644	7,556,597	833,412	1,398,531	69,488	1,573,979	161,454	4,039,550	53.5	3,517,047	2,715,038	3,037,494	3,527,682
Wabash	May	2,523	4,598,442	453,501	5,459,292	738,309	932,772	218,176	2,099,708	232,374	4,242,678	77.7	1,216,614	961,648	583,248	893,427
	5 mos.	2,523	23,091,299	2,351,875	27,312,482	3,143,456	4,841,712	986,843	11,080,170	1,195,577	21,329,877	78.1	5,982,605	4,764,615	2,907,428	4,921,037
Ann Arbor	May	293	416,632	11,424	442,456	54,431	87,061	15,891	179,410	18,898	355,329	80.3	87,127	62,276	41,910	105,739
	5 mos.	293	2,000,351	56,740	2,117,961	194,942	442,166	72,599	898,468	66,001	1,673,694	79.0	444,267	314,689	183,177	449,490
Western Maryland	May	896	1,403,896	13,382	1,525,813	235,281	285,100	46,380	398,637	40,810	1,007,610	66.0	518,203	428,203	441,414	415,507
	5 mos.	894	7,162,475	83,553	7,580,308	1,045,770	1,429,617	223,404	2,065,812	213,177	4,995,599	65.9	2,584,709	2,144,709	2,261,446	2,086,769
Western Pacific	May	1,051	1,019,380	91,581	1,215,054	437,105	215,230	70,446	489,402	49,989	1,295,688	106.6	—80,634	—174,706	—179,120	82,706
	5 mos.	1,051	4,842,103	369,948	5,603,737	1,594,758	1,246,078	342,445	2,300,065	245,629	5,853,114	104.5	—249,377	—749,614	—579,898	625,506
Wheeling & Lake Erie	May	511	1,660,782	14,634	1,814,069	214,492	381,074	38,402	474,863	42,942	1,152,751	63.5	661,318	502,522	496,448	635,622
	5 mos.	511	6,814,324	84,039	7,339,777	808,637	1,854,622	191,647	2,171,623	227,321	5,259,754	71.7	2,080,023	1,425,739	1,450,646	2,103,696
Wichita Falls & Southern	May	203	75,417	477	79,179	13,305	10,981	2,910	26,406	3,873	55,992	70.72	23,187	18,093	10,271	22,766
	5 mos.	203	382,607	2,910	406,332	72.149	53.373	14,514	134,648	26,216	298,244	73.40	108,088	81,844	51,304	78,899

News of the Week

(*Continued from page 79*)

with the percentage of return based on property investment on an annual basis was as follows:

	Income	Rate of Return
New England Region.....	$18,189,588	5.37
Great Lakes Region.....	57,086,434	3.60
Central Eastern Region.....	73,622,110	4.01
Pocahontas Region	31,956,824	8.25
Total Eastern District....	180,854,956	4.36
Total Southern District...	39,075,621	2.86
Northwestern Region	14,636,492	2.08
Central Western Region....	6,596,394	3.43
Southwestern Region	26,496,080	3.39
Total Western District...	87,728,966	3.08
United States	$307,659,543	3.68

For May the net railway operating income was $69,173,825, or 3.78 per cent. In May, 1929, the net was $103,577,561, or 5.79 per cent. Operating revenues for May amounted to $463,130,081, a decrease of 14 per cent. Operating expenses in May totaled $351,780,346, a decrease of 10.2 per cent.

Class I railroads in the Eastern District for the first five months in 1930 had a net of $180,854,956, which was at the rate of 4.36 per cent. For the same period in 1929, their net was $247,559,304, or 6.12 per cent. Operating revenues for five months totaled $1,139,851,971, a decrease of 10.7 per cent, while operating expenses totaled $863,832,636, a decrease of 6.9 per cent. In the Eastern District for May the net railway operating income was $44,043,811, compared with $59,620,745 in May, 1929.

In the Southern District for the first five months the net was $39,075,621, or 2.86 per cent. For the same period in 1929, the net amounted to $58,813,530, or 4.34 per cent. Operating revenues amounted to $292,866,970, a decrease of 11.7 per cent, while operating expenses totaled $229,587,338, a decrease of 6.9 per cent. The net in May amounted to $6,064,893, while in the same month in 1929 it was $10,512,691.

Railroads in the Western district for the five months had a net of $87,728,966, or 3.08 per cent. For the first five months in 1929, they had a net of $150,644,408, or 5.41 per cent. Operating revenues for the five months amounted to $813,715,328, a decrease of 12.2 per cent, while operating expenses totaled $645,095,582, a decrease of 6.8 per cent. For May, the net in the Western district amounted to $19,065,121. The net in May, 1929, totaled $33,444,125.

CLASS I RAILROADS—UNITED STATES

	Month of May 1930	1929
Total operating revenues	$463,130,081	$538,608,395
Total operating expenses	351,780,346	391,528,441
Taxes	31,210,386	33,934,809
Net railway operating income	69,173,825	103,577,561
Operating ratio—per cent	75.96	72.69
Return on property investment, p. c...	3.78	5.79
	Five months ended May 31	
Total operating revenues	$2,246,434,269	$2,534,928,166
Total operating expenses	1,738,515,556	1,866,995,430
Taxes	149,690,335	162,544,885
Net railway operating income	307,659,543	457,017,242
Operating ratio—per cent	77.39	73.65
Return on property investment, p. c...	3.68	5.58

Traffic

The Chicago, Burlington & Quincy is providing radio entertainment for coach passengers on "The Aristocrat," operating between Chicago and Denver, Colo. The loud speakers in the coaches are operated from a master control in the lounge car, which has heretofore been equipped with radio.

The Pennsylvania's 48-hr. coast-to-coast passenger service over the Pennsylvania and the Santa Fe Railroads and the TAT-Maddux Air Lines has now been in operation for twelve months. On the Airway Limited, leaving New York on July 7, passengers received souvenirs of the event; and in the dining cars passengers were served with pieces of birthday cakes.

The New York State Public Service Commission has granted the request of the New York Transfer Company and the Westcott Express Company for authority to increase from $1.15 to $1.25 the standard rate for transporting a trunk in Manhattan (New York City), and an increase of ten cents also in the price for bags. Other requests of the baggage companies were denied. Both of the applicants said that for the past four years business had been done at a loss.

The Missouri Pacific and the Denver & Rio Grande Western have rearranged the schedules of the Westerner and the Salt Lake-San Francisco express and through sleeping cars are run between St. Louis, Mo., and Denver, Colo., and Salt Lake City, Utah. The Westerner now leaves St. Louis at 6:34 p.m. and arrives at Pueblo, Colo., at 4:55 p.m. the next day, Denver at 8:45 p.m. that day and Ogden at 3:45 on the second day. Eastbound the train leaves Ogden at 1:40 p.m., arriving at Pueblo at 10:40 a.m. the next day and at St. Louis at 11:15 a.m. on the second day. Cars for St. Louis leave Denver at 7:45 a.m. on the day following the departure of the train from Ogden, connecting at Pueblo.

Mid-West Shippers' Board

Reports presented before a meeting of the Mid-West Shippers' Advisory Board at Rockford, Ill., on July 8, show that car loadings for the third quarter of 1930, in Illinois, Iowa, Wisconsin, western Indiana and northern Michigan, will probably be about 10 per cent below those of July, August and September, 1929. Actual loadings in this territory in 1929 were 1,508,012 cars.

Increases are expected of 51 per cent for fresh vegetables and 3 per cent for poultry and dairy products. All of the 27 other commodity classifications are expected to show decreases. The principal commodities and their percentage decreases are: Grain, 5 per cent; hay, straw and alfalfa, 11 per cent; fresh fruits, excluding citrous, 58 per cent; potatoes, 12 per cent; live stock, 3 per cent; coal and coke, 3 per cent; ore and concentrates, 20 per cent; gravel, sand and stone, 15 per cent; lumber and forest products, 23 per cent; iron and steel, 15 per cent; machinery and boilers, 15 per cent; brick and clay products, 14 per cent; lime and plaster, 24 per cent; agricultural implements, 20 per cent; automobiles, trucks and parts, 14 per cent; paper, 15 per cent.

P.R.R. and B. & O. Acquire Interest in Trans-Atlantic Line

The Baltimore Mail Steamship Company has been established at Baltimore to provide weekly sailings from that port and Hampton Roads for passengers, mail and freight to Havre, Bremen and Hamburg. Service is to be established in the Spring of 1931. Five liners will be placed in operation at the outset, with a possibility that others may be added later. The Pennsylvania and the Baltimore & Ohio Railroads have acquired a financial interest in the new enterprise.

Store-Door Pick-up and Delivery

The Chicago, North Shore & Milwaukee has placed in operation a plan under which shipments of a minimum of 100 lb. are handled through a forwarding agency in flatcar-trailer equipment, by concentration of small shipments into ten-ton minimum capacities required for shipment by individual "ferry" trucks.

Rates per 100 lb. are 30 cents between forwarding company stations in Chicago and Milwaukee, Wis., with a minimum charge of 50 cents; 45 cents from forwarding company stations in Milwaukee to door of consignee in Chicago, with a minimum charge of $1; and 45 cents from forwarding company stations in Chicago to consignee's door in Milwaukee, with a minimum of 75 cents.

New York Harbor Lighterage Hearings Continued

Hearings in connection with the petition of New Jersey industrial interests, asking the Interstate Commerce Commission to abolish free lighterage service in New York Harbor, have continued each day at Newark, N. J., since their opening on June 26.

Representatives of New Jersey municipalities testified at the opening sessions along with witnesses from industrial plants located in the northern Jersey area. It was the main contention of these witnesses that the present freight rate structure does a grave injustice to the continental side of the harbor. They held that by it improvement of the Jersey water front is discouraged.

The testimony of these industrial and civic representatives was expected to be followed at subsequent hearings by that of railway officers. Several of these latter had been subpoenaed by Deputy Attorney General John J. Hickey of New Jersey.

Foreign Railways

St. Gothard and Simplon Tunnel Jubilee*

On February 28, 1930, the 9¼-mile long St. Gothard tunnel, between Goschenen, Switzerland, and Airolo, was 50 years old, in the sense that boring machinery brought two squads of workmen together on that day in 1880. The last blastings took place on February 29. On February 24, 1930, the 12½-mile long Simplon tunnel, between Brig (Switzerland), and Iselle (Italy), observed its twenty-fifth anniversary. The two jubilees were fittingly remembered by the Swiss government and press.

Plans for a Swiss alpine railway date back to 1838, when the Splugen and Lukmanier passes were surveyed for that purpose. Early plans, however, did not materialize and in 1852 another engineer, Killer, advanced the first project for the St. Gothard tunnel. Five years later came propositions for the tunneling of the Simplon. In view of the central location of the St. Gothard, other plans were finally abandoned, especially when Italy and Germany, who were as interested in the tunnel project as Switzerland, also decided in favor of that. After tedious conferences, a treaty was signed by these three countries in 1871 providing that subsidies should be granted by the contracting parties. The share of Germany and Switzerland was fixed at $4,000,000 each, and that of Italy at $9,000,000. During the process of construction, however, these sums were found to be insufficient, and a material increase was necessary, so that Germany contributed $6,000,000 to the cost, Switzerland $6,200,00 and Italy $11,600,000.

In September, 1872, work was begun and on February 29, 1880, the piercing of the tunnel was accomplished. Formal inauguration followed on May 23, 1882, while a few days later, on June 1, the line was opened to general traffic.

The St. Gothard railway became immediately popular and a second track had to be laid in the tunnel the following year. A credit of 38,500,000 Swiss francs ($7,700,000) for the electrification of the mountain section Erstfeld-Biasca was granted on November 15, 1913. In spite of the war this electrification program was carried out and so rapidly extended that since 1924 the entire St. Gothard line from Basle to Chiasso (Italy), together with the branch line from Zurich, has been operated by electricity. The largest locomotives, now under construction, weigh 230 tons and are capable of developing 6,640 h.p. They will be able, unassisted, to haul express trains of more than 500 tons without the help of another engine over gradients of 2.7 per cent at double the speed of the former steam engines.

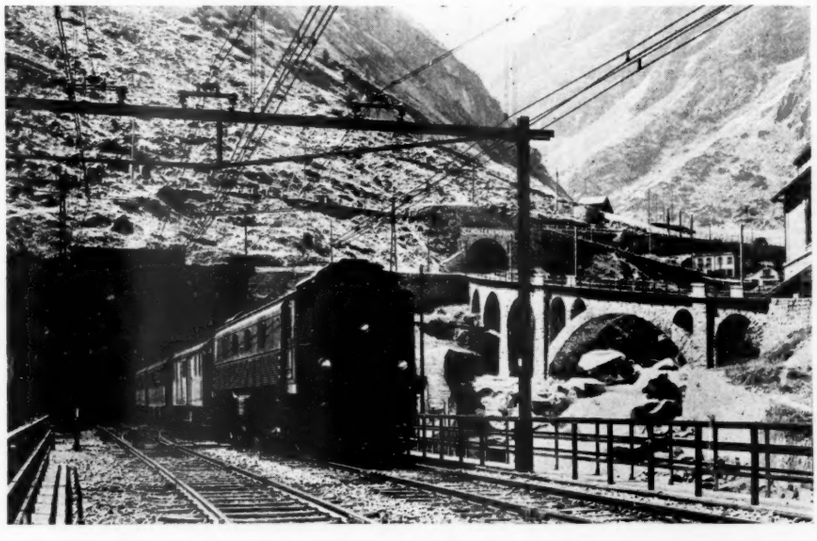
While one day and one night train in each direction were foreseen by the first time-table in June, 1882, the schedule today comprises a large number of day and night express trains. Freight traffic, too, has increased tremendously on the St. Gothard road. In 1913, 2,297,262 gross tons of merchandise were carried through the tunnel from north to south, and 1,772,434 gross tons from south to north. In 1928 these figures reached a record of 4,024,313 and 2,629,327 gross tons respectively.

Newer and more modest, but important for the international traffic from France and England to and through Italy is the Simplon, the world's longest tunnel, 12 miles, 527 yards in length. After a satisfactory agreement had been concluded with Italy, work was begun on August 1, 1898, the total cost of construction amounting to $19,920,000. On February 24, 1905, workers from both ends met and inauguration took place on May 19, 1906.

The Simplon is the lowest great alpine tunnel, its highest elevation reached being only 2,313 ft. It was originally built with two galleries, 56 ft. apart, connected by cross shafts. One gallery alone was at first finished, and only a single track laid. The second gallery was completed in 1922, making it the equivalent of a double-track tunnel. Electric traction was used in the Simplon from the start.

While the St. Gothard railway takes care of the north-south traffic, the Simplon line serves the northwest and southeast movement. The main line is Paris-Milan, but the northern zone extends to Calais and, by means of the Lotschberg access, available since 1913, to the Rhine and North German regions. In the South the Simplon line covers Italy, with transit traffic to Jugoslavia, the Balkans and the Far East.

*Abstract of an article prepared for the Swiss Federal Railways by M. D. Williams.



The Portal of the St. Gothard Tunnel at Goschenen, Switzerland

Kenya & Uganda Railways in 1929

The annual report of the Kenya & Uganda Railways and Harbors for the fiscal year ending December 31, 1929, as reviewed in Modern Transport (London), shows total revenues of £2,825,310 ($13,731,007), compared with operating expenses of £1,893,698 ($9,203,372). The net revenue, amounting to £931,612 ($4,527,634), plus miscellaneous income of £41,271 ($200,577), was distributed as follows: Interest payments, £626,552; contributions to sinking fund, £58,694; to interest reserve fund, £100,000 and surplus transferred to betterment funds, £187,367.

Revenues for the year 1929 represent an increase of 12.51 per cent over 1928 and of 25.16 per cent over 1927, while operating expenses increased by 21.27 per cent and 36.91 per cent when compared with 1928 and 1927, respectively. The greater proportionate increase in expenses brought the operating ratio up from 54.13 in 1927 to 55.86 in 1928 and 59.01 in 1929. In each of the last two years, however, important decreases in freight rates have been put into effect, while in 1929 expenses increased faster than the normal rate, due to the opening up of 113 miles of new line through territory which, as yet, affords but little traffic. Without the influence of these two factors, the 1929 operating ratio would have been only 54.76.

With an average haul of 292 miles per metric ton of freight, as compared with 287 miles in 1928, the total freight train miles required to handle an increase of 13.3 per cent in net metric ton-miles amounted to 2,225,877, an increase of only 7.3 per cent over 1928. The net metric ton-miles per train hour averaged 1,543, an increase of 70 over 1928 and of 201 over 1927, while the average mileage per car per day amounted to 38.73, an increase of 3.4 miles over 1928.

During the year, 18 old Mallet type locomotives, with a tractive force of 23,600 lb. each, were replaced by eight Garrett locomotives, each with a tractive force of 35,500 lb.

Equipment and Supplies

Locomotives

ALTON & SOUTHERN.—See Aluminum Company of America.

THE ALUMINUM COMPANY OF AMERICA has ordered one ten-wheel switching locomotive from the Baldwin Locomotive Works. This locomotive is for service on the Alton & Southern. Inquiry for this equipment was reported in the *Railway Age* of May 10.

THE SALT LAKE & UTAH has ordered a 60-ton electric freight locomotive equipped with four 180-hp., 750-1500-volt slow-speed motors and locomotive-type control. The locomotive will be built jointly by the Westinghouse Electric & Manufacturing Company and the Baldwin Locomotive Works.

Freight Cars

THE SOLVAY PROCESS COMPANY is inquiring for 10 air dump cars.

THE YOUNGSTOWN SHEET & TUBE COMPANY is inquiring for ten flat cars of 70 tons' capacity.

THE FRUIT GROWERS EXPRESS COMPANY has ordered 154 refrigerator cars to be built in its own shops.

THE MISSOURI-KANSAS-TEXAS is making plans and specifications for 25 new caboose cars to be built in its shops at Denison.

THE DETROIT EDISON COMPANY has ordered five steel hopper cars of 70 tons' capacity from the American Car & Foundry Company.

THE GULF REFINING COMPANY has ordered 125 tank cars from the General American Tank Car Corporation and 125 from the Petroleum Iron Works. Inquiry for this equipment was reported in the *Railway Age* of May 17.

THE WESTERN FRUIT EXPRESS has ordered 12 refrigerator cars to be built in its own shops. This company is inquiring for 100 steel underframes for refrigerator cars, in addition to a previous inquiry for 100 steel underframes reported in the *Railway Age* of May 3.

THE UNITED STATES NAVY DEPARTMENT, BUREAU OF SUPPLIES AND ACCOUNTS, has ordered two box cars of 50 tons' capacity and two steel underframe flat cars of 50 tons' capacity from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of May 31.

Iron and Steel

THE SOUTHERN PACIFIC has ordered 225 tons of steel from the Columbia Steel Company for work at Colusa, Cal.

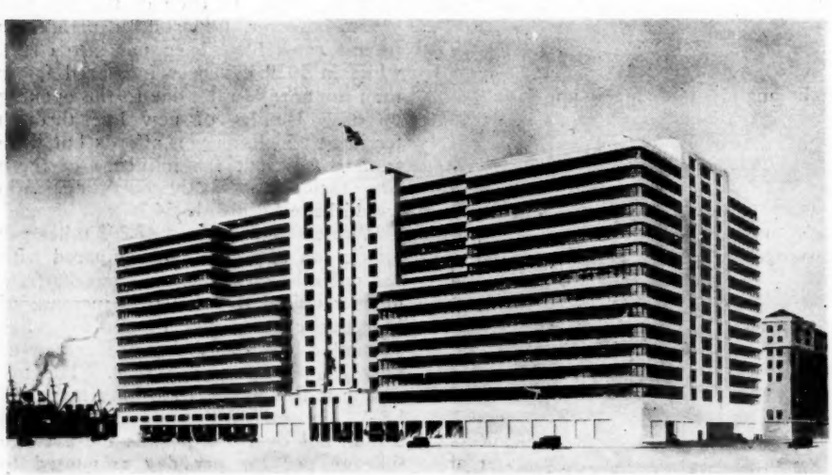
THE BALTIMORE & OHIO has ordered 110 tons of steel for work at Gaithersburg, Md., from the Bethlehem Steel Company.

THE PENNSYLVANIA has ordered 2,000 tons of steel for Pier D at Jersey City, N. J., from the McClintic-Marshall Company.

Signaling

THE WASHINGTON, BALTIMORE & ANNAPOLIS ELECTRIC RAILROAD has contracted with the Union Switch and Signal Company for the installation of a mechanical interlocking at Linthicum Heights, Md.

* * * *



The 15-Story Freight Terminal to be Erected on Lehigh Valley Property in New York City

The largest building of its kind ever constructed, the new terminal will contain 25,000,000 cu. ft. of storage space and 1,750,000 sq. ft. of floor space, while continuous windows combined with the absence of exterior columns will provide a maximum amount of daylight. Work will be started at once, on the block bounded by West Twenty-sixth and Twenty-seventh streets and Eleventh and Thirteenth avenues, and the building will be ready for occupancy by the middle of 1931. Starrett Brothers & Eken are the builders and R. G. Cory the architect and engineer.

Supply Trade

The Wagner Electric Corporation, St. Louis, Mo., has combined its sales office and service station for the Atlanta territory in a new building at 14-20 Alexander street, N. W., Atlanta, Ga.

The Prest-O-Lite Company, Inc., New York, has opened a new plant for the manufacture and distribution of dissolved acetylene at 648 Bryan Stock Trail, Casper, Wyo.

J. F. Raps, general locomotive and boiler inspector of the Illinois Central, has resigned to become central manager of the **Okadee Company** and the **Viloco Railway Equipment Company,** with headquarters at Chicago.

A. W. Clokey, railroad sales representative of the **American Arch Company,** has resigned to become railroad sales representative of the **Joslyn Manufacturing & Supply Company** with headquarters at 120 So. LaSalle street, Chicago.

G. Swallow has become associated with the **USL Battery Corporation,** Niagara Falls, N. Y., as representative to handle its railway signal equipment in the New England and eastern territory. Mr. Swallow will have his headquarters at Philadelphia, Pa.

Cutler - Hammer, Inc., Milwaukee, Wis., on July 1 acquired control of **Schweitzer & Conrad, Inc.,** Chicago, manufacturers of high voltage electrical equipment and the latter company will continue to operate as an independent manufacturing and selling unit. **Beverly L. Worden,** president of Cutler-Hammer, has also been elected president of Schweitzer & Conrad. **N. J. Conrad** and **E. O. Schweitzer** will continue their connection with the company as consulting engineers.

N. G. Symonds, Northwest district manager of the **Westinghouse Electric & Manufacturing Co.,** East Pittsburgh, Pa., has been appointed commercial vice-president of the Central district of that company at Chicago, a newly created position. **C. E. Stephens,** Northeastern district manager, has been elected commercial vice-president of the Altantic division at New York. **W. R. Marshall,** Pacific Coast district manager, has been elected commercial vice-president of the Pacific division at San Francisco, Cal.

H. W. Petty, formerly connected with the Detroit, Mich., sales office of **the Wagner Electric Corporation,** St. Louis, Mo., has been appointed branch sales manager for that company's Pittsburgh territory, with headquarters at Pittsburgh, Pa. Mr. Petty has been in the service of the Wagner Electric Corporation since graduating from Washington University in St. Louis in 1924.

John T. Broderick, secretary of the **General Electric Company's** manufacturing committee, retired from active service on July 1 after 41 years of continuous service. He joined **the**

Thomson-Houston Company at Lynn, Mass., in 1889, as one of the factory staff of E. W. Rice, Jr., then superintendent of the plant and after several years as personal assistant to Mr. Rice, during which interval the General Electric Company was formed in 1892, Mr. Broderick was elected secretary of the manufacturing committee shortly after its organization in 1893.

William Stringham, assistant general superintendent of the East Works plant of **The American Rolling Mill Company**, Middletown, Ohio, since 1923, has been appointed assistant vice-president of the company. Mr. Stringham joined the Armco organization in February, 1901, as a roller in the Central Works plant, Middletown, and in January, 1912, he was appointed assistant superintendent of the sheet and jobbing mill. On June 1, 1922, he was promoted to superintendent of the sheet and jobbing mill departments. In February, 1923, he was appointed assistant general superintendent of the East Works, and is now in charge of all the rolling and finishing operations in that plant.

James R. White, secretary of **Jenkins Bros.**, New York, has been promoted to vice-president and director of sales of the company, with headquarters at New York. He will continue in

James R. White

charge of advertising. Mr. White is president of the Technical Publicity Association, one of the oldest industrial advertising associations in this country.

Obituary

W. E. McGarry, vice-president of the General Freight Service Association and an organizer of the Burlingame and McGarry Railway Supply Company, St. Louis, Mo., died of a paralytic stroke on July 4, at Cincinnati, Ohio, at the age of 49 years.

Joseph Frumveller, mechanical inspector and engineer of the Vapor Car Heating Company, Inc., died at his home in Chicago on May 13, at the age of 75. Prior to entering the employ of the Vapor Car Heating Company in 1910, Mr. Frumveller for many years was associated with the Pullman Company, at one time being general foreman of Pullman car shops.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract for the construction of a 1,900-ft. deck girder bridge over the Rio Grande river at Presidio, Tex., has been let to the List Construction Company, Kansas City, Mo.

ATCHISON, TOPEKA & SANTA FE.—The Union Bridge & Construction Company, Kansas City, Mo., has been awarded a contract by this company for the construction of the substructure, including 17 piers, of a new bridge to be built across the South Canadian river about 20 miles north of Amarillo, Tex. This bridge will be 1,736 ft. long and 114 ft. above the river. Ten piers will be sunk by pneumatic process and seven open piers founded on rock. Piers will contain about 12,000 cu. yd. of concrete. The total cost of the bridge, which is on the new line being constructed by the Santa Fe between Amarillo, Tex., and Las Animas, Colo., will be about $1,000,000.

CANADIAN PACIFIC.—This company plans the immediate reconstruction of two bridges on its lines in Maine at a total cost of approximately $950,000. The present bridge at M.P. 17 on the Moosehead subdivision near Onawa, Me., will be replaced by a steel viaduct approximately 1,180 ft. long and 123 ft. high, with a river span of 208 ft., while the existing bridge at M.P. 28.3 on the same subdivision across Wilson stream will be renewed by a steel viaduct 870 ft. long and 120 ft. high with a deck truss span of 160 ft. over the river. Both bridges will be erected on concrete piers and will be capable of carrying the heaviest locomotives now in use. The Canadian Pacific has also completed plans for its Wolfe's Cove branch in the City of Quebec, Que., as mentioned in the *Railway Age* of April 12. The new line, starting at a point about 2.5 miles west of Palais station, Quebec, and running at right angles to the main line directly to the waterfront at Wolfe's Cove, will be about 1.5 miles long with a one mile tunnel at the southerly end.

CHESAPEAKE & OHIO.—A contract for the immediate construction of a new passenger station, additional parking tracks and other improvements at White Sulphur Springs, W. Va., representing a total expenditure of approximately $170,000, has been awarded to Ward & Ward Company, Charleston, W. Va. The new station is to be of brick construction, in southern colonial style, and will be equipped with all modern conveniences. Parking tracks, provided with water and steam outlets and concrete platforms and driveways, are to be located north of the station, while the improvement program also includes the construction of about 600 ft. of additional station platform, providing a total platform length of 1,100 ft., 700 ft. of which will be covered by a train shed. It was reported in the *Railway Age* of May 3 that bids were being received for this work. A contract has also been awarded to the Walton Construction Company, Roanoke, Va., for the construction of a new single-track Alleghany tunnel, 4,550 ft. long, 86 ft. north of and parallel to the existing Alleghany tunnel. The new tunnel is to serve eastbound traffic and upon its completion the present double-track Alleghany tunnel will be relined and converted into a single-track tunnel for westbound traffic, at a cost of approximately $1,660,000, as reported in the *Railway Age* of March 29.

CHICAGO, BURLINGTON & QUINCY.—This company and the Missouri State Highway Commission have applied to the public service commission of that state for authority to construct a reinforced concrete viaduct to separate the railroad's tracks from Highway No. 71 in Buchanan county. The cost, about $31,000, will be shared jointly.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—The general contract for the construction of a 2,000,000-bu. addition to Elevator E at Milwaukee, Wis., has been awarded to the James Stewart Corporation, Chicago, at a cost of about $250,000.

CHICAGO, ROCK ISLAND & PACIFIC-ST. LOUIS-SAN FRANCISCO.—A contract for the construction of a union passenger station building at Oklahoma City, Okla., has been let to the Tankersly Construction Company, Oklahoma City. The building proper will involve an expenditure of about $575,000.

CHICAGO, ROCK ISLAND & PACIFIC-ST. LOUIS SOUTHWESTERN.—These companies, which have been in controversy over the construction of new lines to serve the reclaimed area of the Trinity river levee district at Dallas, Tex., have reached an agreement under which the two companies will lay nine miles of track. The Rock Island will construct six miles of track to serve about 3,000 acres of industrial sites at a cost of $200,000, while the Cotton Belt will construct three miles of track at a cost of $150,000 to serve 2,000 acres.

DAYTON & UNION.—A contract for the construction of reinforced concrete retaining walls, abutments and culverts for the elevation of the tracks of the Pennsylvania between Bainbridge and Detroit streets at Dayton, Ohio, has been let to the Bates & Rogers Construction Co., Chicago, at a cost of $197,678.

DELAWARE & HUDSON.—The Public Service Commission of New York has approved plans and estimates of cost totaling $114,838 for the elimination of a grade crossing at Warren street, Queensbury, N. Y., and of $42,500 for the construction of an overhead bridge in connection with the elimination of the Coopersville station crossing on the Chazy-Rouses Point state highway, Champlain, N. Y. The Queensbury

project also involves track and signal changes, to cost about $20,000. The Commission has also approved plans prepared for the elimination of the grade crossing of the D. & H. and the Elsmere-Bethlehem Center county highway at Elsmere station, Bethlehem, N. Y.

ERIE.—The New York Public Service Commission has approved the general plan submitted by this company for the elimination of a grade crossing on the Lakeville-East Avon highway, Avon, N. Y., and has added the Liberty street crossing, Endicott, N. Y., to the list of those to be considered for elimination during 1930. The Commission has also amended an earlier order concerning the elimination of three West Main street crossings on this company's Pine Island branch, Goshen, N. Y. The amended order provides that two of the three crossings be closed and traffic diverted to a grade separation structure spanning the track about 1,000 ft. west of the present middle crossing. This work is estimated to cost $159,000.

ERIE - DELAWARE, LACKAWANNA & WESTERN.—The Public Service Commission of New York has approved plans submitted by these companies for the elimination of grade crossings in Big Flats and Horseheads, N. Y., in accordance with a previous commission order, reported in the *Railway Age* of January 11. The Commission has also approved as not excessive the bid of $168,368 submitted by William L. Collins, Hornell, N. Y., for the construction of approaches in connection with the elimination of grade crossings of these company's lines in the village of Painted Post, N. Y. This part of the elimination work is to be paid for by the New York State Department of Public Works, while the construction of the grade separation structures will be undertaken by the railroads upon the completion of the approaches.

ERIE - LEHIGH VALLEY - DELAWARE, LACKAWANNA & WESTERN. — Revised plans and an estimate of cost totaling $107,200, for the elimination of the Ely (Indian) road and the Williamsville (Cayuga) road crossings of the tracks of these three companies in Depew, N. Y., have been approved by the New York Public Service Commission.

KENTUCKY & INDIANA TERMINAL.—A contract has been awarded to the Henry Bickel Company, Louisville, Ky., for the elevation of the tracks of this company at Louisville, at a cost of about $270,000.

LEHIGH VALLEY.—Following the completion of negotiations between the Starrett Investing Corporation and the Pioneer Real Estate Company, a subsidiary of the Lehigh Valley, arrangements have been made to erect a 15-story freight terminal and warehouse on property owned by the Lehigh Valley on the West side of Manhattan Island. The block bounded by West Twenty-Sixth and Twenty-Seventh streets and by Eleventh and Thirteenth avenues, leased by the Starrett Investing Corporation for a period of 99 years, has been selected as the site for the new building, the ground floor of which will be used as a freight terminal for the Lehigh Valley. The other floors will be used for general industrial purposes. The structure, the largest of its kind ever built, will contain approximately 25,000,000 cu. ft. of storage space and over 1,750,000 sq. ft. of floor area. All floors will be served by elevators 10 ft. by 30 ft., capable of carrying trucks of the largest capacity and size, so that any occupant of the warehouse will be able to load and unload shipments on his own floor, while the absence of exterior columns and the provision of continuous windows on all sides of each floor will insure a maximum amount of daylight throughout the building. Work will be begun at once by Starrett Bros. & Eken, contractors, under the direction of R. G. Cory, architect and engineer for the structure. A photograph of the proposed building, reproduced from the architect's drawing, appears on page 88 of this issue of *Railway Age*.

NEW YORK CENTRAL.—This company and the Michigan Central have applied to the Interstate Commerce Commission for authority to construct an extension of 7.25 miles in the vicinity of Grand Rapids, Mich.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved general plans submitted by this company for the elimination of its Cemetery crossing on the Canton-Potsdam state highway, Canton, N. Y.; detailed plans for the elimination of Albion street crossing, Murray, N. Y.; revised plans for the elimination of Genesee street crossing, Cheektowaga, N. Y., and an estimate of cost totaling $92,500, exclusive of land and damages, for the construction of approaches to the elimination of the Watkins-Yates county line state highway crossing, Reading, N. Y.

NEW YORK CENTRAL.—This company has recently awarded contracts as follows: For the construction of foundations and abutments and the completion of a viaduct at West End avenue and West Sixty-Fifth street, New York, to H. H. Sherwin & Company, Inc., New York; for the construction of duct lines and splicing chambers between 140th street and the Hudson division crossing at Mott Haven (New York City), to Edward J. Duffy Company, Inc., New York; for the building of two sheet metal covered storehouses at Port Morris, N. Y., to Miller-Blyth, Inc., New York; for the demolition of buildings on Charlton, King, West and Washington streets, New York, to the Markley Contracting Company, New York; for the manufacture and delivery of steel for signal bridges and platform alterations between Fifty-Seventh street and Mott Haven (New York City), to the Shoemaker Bridge Company, New York; for the construction of a highway to eliminate an existing grade crossing at Boxhart street, Rochester, N. Y., to Dempsey & Ballard, Inc., Syracuse, N. Y.; for the elimination of the Main street grade crossing, New Hamburg, N. Y., to the Walsh Construction Company, Syracuse, N. Y., and for the reconstruction of bridge F-156, Knowlesville, N. Y., to William J. Gallagher, Medina, N. Y.

PENNSYLVANIA.—See Dayton & Union.

PENNSYLVANIA.—A contract for the removal of the train shed at the passenger station at Columbus, Ohio, has been awarded to the Ferro Construction Company, Chicago.

PENNSYLVANIA.—A contract for the construction of an undergrade bridge east of Middle River, Baltimore County, Md., has been awarded to the McNichol Paving & Construction Company, Philadelphia, Pa., at a cost of approximately $25,000. Plans submitted by this company for the elimination, by construction of a highway bridge, of its Osborne crossing, Sherman, N. Y., have been approved by the Public Service Commission of New York. As reported in the *Railway Age* of October 26, 1929, the Hitcomb and Shreve crossings, adjacent to the Osborne crossing, will be closed upon completion of the work and traffic from them will be diverted to the new grade separation structure.

ST. LOUIS-SAN FRANCISCO. — City authorities at St. Louis, Mo., have authorized the construction of a four-track reinforced concrete and steel structure to carry the tracks of this railway over Southwest avenue at Ivanhoe avenue in St. Louis. The city's portion of the total cost of $123,800 will be $56,300. Construction will be undertaken by the railroad.

SOUTHERN PACIFIC. — The Interstate Commerce Commission has authorized Morgan's Louisiana & Texas and the Texas & New Orleans to construct two extensions in the vicinity of Lockport, La., totaling 10.4 miles, at an estimated cost of $100,912.

* * *

A Chicago, Burlington & Quincy Train Near Aurora, Ill.

Railway Finance

BALTIMORE & OHIO.—*Time for Disposing of Western Maryland Stock Extended.*—The Interstate Commerce Commission, at the request of the B. & O., has extended from July 13 to January 13, 1931, the time in which it is required to divest itself of its stock in the Western Maryland, the acqusition of which the the commission held to have been in violation of the anti-trust law.

BOSTON & MAINE.—*Operating Agreement.*—This company and the Vermont Valley have applied to the Interstate Commerce Commission for authority to extend for ten years the term of existing operating agreements defining the arrangements under which the Boston & Maine conducts its operation of the Vermont Valley and of the Sullivan County.

BOSTON TERMINAL.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $1,500,000 of first mortgage 20-year 4 per cent bonds, which it is proposed to sell to Lee, Higginson & Co., at 99.09 and interest.

CHESAPEAKE & OHIO.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Big Sandy & Kentucky River under lease and by purchase of its capital stock for $706,854.

DENVER & RIO GRANDE WESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon the operation of a branch line, narrow-gage, from Taos Junction to La Madera, N. M., 16.43 miles.

ERIE.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability for $6,690,000 of its 4½ per cent equipment trust of 1930 certificates, to mature in installments from 1930 to 1945. The issue is authorized for sale to Drexel & Co., at 98.8401, making the average annual cost to the railroad approximately 4.6891 per cent.

GREAT NORTHERN.—*Promissory Notes.*—The Interstate Commerce Commission has authorized this company to guarantee $3,446,880 of 5 per cent promissory notes of the Cottonwood Coal Company, a subsidiary.

LOUISVILLE & NASHVILLE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to procure the authentication and delivery of $17,311,000 of first and refunding mortgage bonds, to reimburse the treasury.

MAINE CENTRAL.—*Control of Upper Coos.*—The Interstate Commerce Commission has authorized this company to acquire control of the Upper Coos Railroad, 41.5 miles, by purchase of its capital stock.

MISSOURI PACIFIC.—*Unification Plan Found in Public Interest.*—The Interstate Commerce Commission on July 8 made public a report finding that it would be in the public interest for the Missouri Pacific to acquire control by 99-year lease of 22 of its subsidiary companies now controlled by stock ownership, but the record will be held open for submission by the applicant ot a supplementary plan, which while not altering the recorded application in other respects, shall provide a bona fide and feasible plan for the acquisition and operation of all the short lines allocated to the Missouri Pacific system in the commission's consolidation plan, which connect with the Missouri Pacific or the lines now sought to be leased, except such as may be found by the Commission not to be required by the present or future public convenience and necessity. The report is not to be considered as in any manner affecting or altering any of the rights or obligations existing by virtue of a contract with the citizens of Palestine or the county of Anderson, Tex., or decision of the courts relating to the maintenance of the offices, shops, etc., of the International-Great Northern at Palestine. Commissioners Eastman and McManamy dissented, and Commissioner Brainerd concurred only in part. The roads to be leased are the New Orleans, Texas & Mexico, the International-Great Northern, the St. Louis, Brownsville & Mexico, the Orange & Northwestern, the New Iberia & Northern, the Iberia, St. Mary & Eastern, the Houston & Brazos Valley, the San Benito & Rio Grande Valley, the San Antonio, Uvalde & Gulf, the Sugar Land, the Rio Grande City, the Asherton & Gulf, the Asphalt Belt, the San Antonio Southern, the Austin Dam & Suburban, the Beaumont, Sour Lake & Western, the Houston North Shore, the Natchez & Southern, the Natchez & Louisiana Transfer, the New Orleans & Lower Coast, the Fort Smith Suburban, and the Missouri Pacific in Nebraska. In behalf of the applicant it was estimated that by unification of the accounting departments of the several companies involved $45,000 a year would be saved in the accounting of the general manager's office; that unified purchasing would effect economies of $40,000 yearly; that centralizing of the stores department for the whole system would cause an annual saving of $109,892.20 in accounting and supervision, and that $187,000 a year would be saved in the mechanical departments. The lines concerned now maintain aggregate stocks of material and supplies valued at $15,794,000. It is estimated that these stocks could be reduced at least $1,500,000 by unification of the supply departments, and that a saving of $90,000 a year in interest would thus be effected. The total yearly savings in the several departments under the jurisdiction of the general manager are estimated at $719,572 and reductions in expenses in the accounting department at $275,000 a year, exclusive of the savings that could be made at division points and in the accounting in the operating department. The total annual savings to be effected from the proposed unification are placed at a minimum of $1,000,000 in addition to other economies that can not be estimated in dollars. The protesting stockholders of the N. O., T. & M. asserted that the dividend of $7 a share which the applicant proposes to pay on the stock of that company is insufficient, and not commensurate with the earnings of that company. The record shows earnings of that company per share of stock available for dividends in 1922 of $11.48, in 1923 of $16.19, in 1924 of $18.42, in 1925 of $16.76, in 1926 of $12.50, in 1927 of $3.17, and in 1928 of $6.95. At the argument it was stated that the earnings for 1929 were likewise less than 7 per cent. The falling off in earnings since 1926 was attributed by the applicant to the increased competition of the Southern Pacific, whose lines were extended into the Rio Grande Valley in 1926 and 1927, to increased truck and automobile competition, to increases in wages, to decrease in freight rates, and to flooded conditions in the valley in 1927. The commission found the protest not well-founded.

The commission considered the protest of the state of Texas that the proposed unification would be in violation of its laws and constitution and held that the powers conferred on it by federal law are not restricted by state laws or constitutions, although it said it is not its province to decide whether the transportation act invalidates the provisions of the contract of the city of Palestine and Anderson county with the predecessor of the I.-G.N. The commission also considered the case of each of the short lines that intervened in the proceedings and declined to make any change in the assignments made in its consolidation plan but in the case of the Cape Girardeau Northern it expressed the opinion that public convenience and necessity do not require its present inclusion in the Missouri Pacific system. The report, although not made public until July 8, was dated June 2, which indicates that it may have been held up pending possible action by Congress on the Couzens resolution.

NEW YORK, NEW HAVEN & HARTFORD.—*Valuation.*—This company has filed in the District of Columbia supreme court a petition for a writ of mandamus to require the Interstate Commerce Commission to ascertain and report as a part of its valuation the value of its rights in the Grand Central Terminal at New York and in the Boston terminal properties.

PITTSBURGH & WEST VIRGINIA.—*Price Paid by Pennroad Corporation to Be Disclosed.*—The Interstate Commerce Commission has denied a request of this company that it reverse its ruling that F. E. Taplin, president of the P. & W. V., should divulge the price at which he and associates sold a majority of the stock of the company to the Pennroad Corporation. The ruling was made on motion of the Wheeling & Lake Erie and the New York, Chicago & St. Louis at the recent hearing

on the P. & W. V. application for authority to acquire control of the Wheeling. C. F. Taplin, general counsel of the P. & W. V., in asking the commission to reverse its ruling, said that there was no objection to the commission knowing the figure involved, and that it had probably been voluntarily disclosed by the Pennroad Corporation to the House Committee in connection with its investigation of holding companies, but that it had been sought in this case for purposes entirely foreign to the matters involved.

READING.—*Bonds.*—The First National Bank (New York) is offering $15,000,000 of general and refunding mortgage series B 4½ per cent bonds of this company at 99½, subject to the approval of the Interstate Commerce Commission. The issue will mature in 1997.

ST. LOUIS-SAN FRANCISCO.—*Purchase of G., T. & W.*—The Frisco announced on July 2 that it had purchased for $1,800,000 the entire capital stock of the Gulf, Texas & Western, extending between Seymour, Tex., and Salesville, 100 miles. Operation of the line has been taken over by the Frisco.

ST. LOUIS SOUTHWESTERN.—*Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue $7,000,000 of 4½ per cent notes, secured by pledge of first terminal and unifying mortgage bonds, which are to be purchased by the Chase National Bank of New York. The company has also applied for authority for an issue of $810,000 of 4½ per cent equipment trust certificates.

SEABOARD AIR LINE.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability for $3,510,000 of first-lien equipment trust 5 per cent certificates, $1,081,000 of second-lien equipment trust 5½ per cent certificates and $86,000 of second-lien 5 per cent equipment trust certificates, all the certificates to be of series DD. $1,081,000 of second-lien certificates will mature in installments from 1931 to 1940, the remainder maturing from 1931 to 1933. The first-lien certificates will mature in installments from 1930 to 1945. The first-lien certificates are authorized for sale to Edward Lowber Stokes & Co., and Freeman & Co. at 96.32, making the average annual cost to the railroad 5.6263 per cent. The second-lien certificates will be delivered to the builders of the equipment at par.

Average Prices of Stocks and of Bonds

	July 8	Last week	Last year
Average price of 20 representative railway stocks.	111.53	112.40	147.78
Average price of 20 representative railway bonds..	94.09	93.65	90.44

Dividends Declared

Atchison, Topeka & Santa Fe.—Common, $2.50, quarterly, payable September 2 to holders of record July 25.

New York, New Haven & Hartford.—Common, $1.50, quarterly; Preferred, $1.75, quarterly, both payable October 1 to holders of record September 5.

Railway Officers

New National of Mexico Executives Are Engineers

Lorenzo Perez Castro and **Francisco de P. Landa,** who were recently selected as vice-presidents of the National Railways of Mexico, with headquarters at Mexico, D. F., have both devoted their entire careers to engineering, Mr. Perez Castro in the field of hydraulics and railroads and Mr. Landa in the field of railroads. Each approached his professional experience with a training as a civil engineer.

Mr. Perez Castro, new executive vice-president, was born in Mexico, D. F., on April 18, 1878, and received his early scholastic training in the same city. He finished his studies at the National Preparatory School at the age of 18 years and completed his professional work at the National School of Engineers, Mexico, at the age of 21 years. Between the time of his graduation, in 1899, and 1901,

Lorenzo Perez Castro

when he was granted the title of civil engineer, he was engaged in various engineering projects.

From 1902 until 1913, he was connected with the Secretary of Communications and Public Works of Mexico, devoting his attention to various railway projects as a technical inspector. These included the Atlamaxac Railway (now the Zacatlan branch of the Mexican Railway) and the line between El Guarda, D. F., and Nepanapa, Mor. This period also included service as inspector on the construction of the Interoceanic between Mexico and Vera Cruz and a portion of the proposed Vera Cruz-Tampico line of the National of Mexico. His last assignment from this office was that of chief of inspection service of the Sixth Zone of Public Ways and Construction, which comprised 2,180 miles of railroad on the Mexican, the Interoceanic and the Mexican Southern.

At the same time he was a member of the commission appointed to study the causes of railway accidents and propose measures for their reduction, the commission to study the Encarnacion viaduct of the Central Mexican and the bridge which was substituted for it, the commission to formulate a plan to encourage railway construction and the commission to form new technical rules for the railways. From 1902 to 1913 he was also in charge of a number of hydraulic works and assistant professor of practical topography of the National School of Engineers at Tlaxco, Tlax.

During 1914 he was inspector of interlocking plants and assistant engineer, maintenance of way of the National Railways and in November, 1915, he became secretary of the board of directors of those railways. In March, 1916, he was appointed engineer of bridges, becoming chief of the bureau of industries under the secretary of industry, commerce and labor in July, 1917, a position he retained until February, 1925. From 1917 to 1925 he was also extra commissioner of the National Railways, a director of the National Railways, vice-chairman of the board and a member of the executive committee, and a director of the Vera Cruz Terminal Company. In February, 1925, he was appointed chief of the traffic and concession bureau under the secretary of communications and public works. While in that position, he aided in the proposed organization of the Pan-American Railroad, collaborated in forming laws governing air navigation and served as the government representative on the efficiency commission of the National Railways, which was created in agreement with the International Committee of Bankers.

When the efficiency commission completed its work on June 1, 1929, Mr. Perez Castro was commissioned to make a valuation of damage to railway property occasioned by the military operations of March, 1929. This work was interrupted in August, 1929, by his selection to make a study of European railroads, chiefly Belgian and German, for the commission charged with developing an administrative and financial plan for the National Railways. Upon his return to Mexico, he was appointed advisor to this commission and in May, 1930, he was appointed assistant to the executive vice-president of the National Railways, his election as executive vice-president becoming effective on June 13.

F. de P. Landa, new vice-president and transportation manager of the National Railways, has been connected with railways in that country for 37 years. He was born at Leon, Gto., on December 7, 1875, and obtained the degree of bachelor at high school. At the age of 14 years, he entered railway service as a mechanical apprentice at the Texcoco (Mex.) shops of the Interoceanic Railroad, where he remained until June, 1892, when he became a brakeman. In November, 1893, he was promoted to conductor and from February, 1895, to August, 1901, he served successively at San

Lazaro station as cashier, as station agent at Virreyes, Pue., and as ticket agent at Mexico City.

He returned to the operating department in September, 1901, as a fireman. Later he acted as a hostler and an engineman, and in March, 1910, he was appointed road foreman of engines on the Guadalajara division of the National of Mexico. He was promoted to traveling conductor in January, 1911, and to trainmaster of the Puebla division in September of that year and later he was transferred to the Pacific division. Early in 1913, he was advanced to general inspector of the operating department and in April, 1914, he was promoted to division superintendent of the Jalapa division. When the Federal government took charge of the National Railways in 1916, he became, first, chief clerk to the general manager of the National of Tehuantepec (now part of the National of Mexico), and then superintendent of transportation, where he remained until the lease contract between Pearson & Son and the Mexican government was cancelled in 1917.

Francisco de P. Landa

For two years from October, 1918, to October, 1920, he served as forwarding agent for the Mexican Petroleum Company at Salina Cruz, Oax., then being appointed assistant to the general manager of the National of Mexico. He was appointed superintendent of transportation of the Tehuantepec National in May, 1924, and one year later he became railroad member of the Efficiency Commission which was established in May, 1925, in accordance with an agreement between the Mexican government and the International Committee of Bankers, to study the National of Mexico. On May 31, 1929, he was appointed chief of the collective labor contracts' committee, his appointment as vice-president and transportation manager of the National Railways of Mexico becoming effective on June 1.

Executive

C. W. Brecht, assistant to the operating vice-president of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, also took over the duties of assistant to the president on July 1 following the granting of an indefinite leave of absence to **R. M. Shepherd,** who formerly held that position, so that he might accept service with another company.

Financial, Legal and Accounting

H. W. Dorigan has been appointed assistant to the comptroller of the New York, New Haven & Hartford, succeeding **W. A. Gordon,** who has resigned to enter industrial service.

F. H. Jeffrey, acting credit officer and formerly auditor of station accounts of the Chicago, Milwaukee, St. Paul & Pacific, has been appointed credit officer, with headquarters as before at Chicago. **F. D. Dale,** acting auditor of station accounts, has been appointed auditor of station accounts.

Operating

R. J. Beilsmith, assistant superintendent of telegraph of the Wabash, has been promoted to joint superintendent of telegraph of that railroad and the Western Union Telegraph Company, with headquarters at Decatur, Ill., succeeding **J. P. Church,** deceased. The position of assistant superintendent of telegraph was abolished on July 1.

C. W. Watts, superintendent of freight claim prevention of the Missouri-Kansas-Texas, with headquarters at Denison, Tex., has been appointed division superintendent at Wichita Falls, Tex., succeeding **T. F. Gardner,** who has been transferred to Parsons, Kan., where he replaces **J. H. Little,** who has been transferred to Muskogee, Okla., succeeding **G. C. Byers,** promoted.

W. D. Neil, assistant manager of the Western telegraph lines of the Canadian Pacific at Winnipeg, Man., has been promoted to assistant general manager, with headquarters at Montreal, Que. **W. M. Thompson,** superintendent of the Ontario division at Toronto, Ont., has been promoted to assistant manager of the Western telegraph lines at Winnipeg, succeeding Mr. Neil. **W. S. Emery,** chief operator at Montreal, has been promoted to superintendent of the Eastern division at Montreal, succeeding **H. S. Ingram,** who has been transferred to the Ontario Division at Toronto.

Grover C. Byers, who has been promoted to general superintendent of the Missouri-Kansas-Texas Lines, with headquarters at Denison, Tex., has been connected with that road for nearly 25 years. He was born in Texas on October 11, 1887, and graduated from high school in 1903 and from a business course in 1904. In September, 1905, Mr. Byers entered railway service on the Katy at Smithville, Tex., later being transferred to New Braunfels, Tex. He then served successively as a night telegrapher, operator and day telegraph operator in the dispatcher's office, circuit manager, car distributor, stenographer, extra dispatcher, dispatcher and chief dispatcher at Smithville, New Braunfels, Hillsboro, Tex., and Greenville and Parsons, Kan. Early in 1918 he was commissioned a first lieutenant of engineers, United States Army, serving in France as a lieutenant, a captain and major with the Sixty-Eighth Engineers until July, 1919. In August, 1919, Mr. Byers was appointed chief dispatcher at Wichita Falls, Tex., then being promoted to trainmaster at the same point, where he remained until November, 1920, when he was transferred to Denison. On February 1, 1927, he was promoted to superintendent of the McAlester district at Muskogee, Okla., his further promotion to general superintendent becoming effective on July 1.

J. B. Hamilton, who has been promoted to superintendent of the Wisconsin division of the Illinois Central, with headquarters at Freeport, Ill., has been connected with that road for 23 years. Mr. Hamilton was born on May 8, 1888, at Du Quoin, Ill., and graduated from the high school at that place in 1906. He entered railway service on April 7, 1907, as a clerk at Du Quoin and three years later he was advanced to cashier at Hawthorne, Ill. In July, 1912, he became agent at Harvey, Ill., and later in the same year he was promoted to chief clerk of the loss and claim bureau at Chicago. Mr. Hamilton served during part of 1917 and 1918 as agent at Fordham (Chicago), where he remained until November of the latter year when he became terminal freight agent at Chicago. In April, 1920, he was appointed acting trainmaster at Fordham, then being promoted to supervising agent on the St. Louis division in May, 1920, and to trainmaster on the Chicago terminal at Fordham in September, 1920. He was transferred to the Central Station, Chicago, in November, 1925, where he remained until November, 1928, when

J. B. Hamilton

he was promoted to superintendent of freight service, with headquarters at Markham Yard, Chicago. Mr. Hamilton's promotion to superintendent of the Wisconsin division became effective on June 16.

Traffic

H. B. Meinhardt has been appointed special agent, refrigerator service, of the Chicago, Burlington & Quincy at Chicago.

W. D. Grubb, general agent for the Midland Valley at Tulsa, Okla., has been appointed assistant general freight agent of the Louisiana, Arkansas & Texas at Dallas, Tex.

A. T. McKean, assistant general freight agent on the Canadian Pacific at Vancouver, B. C., has been promoted to general freight agent, with supervision of traffic in British Columbia, including the Esquimalt & Nanaimo and the British Columbia coast steamship services of the C. P. R. and the United States coast traffic. Mr. McKean's headquarters will be at Vancouver and the position of assistant general freight agent has been abolished.

J. D. Gowin, assistant general agent of the freight department of the Missouri Pacific at Chicago, has been appointed freight traffic manager of the Missouri Pacific Transportation Company, with headquarters at Little Rock, Ark., and Houston, Tex. **V. K. Norbert,** general agent for the Missouri Pacific at Cleveland, Ohio, has been transferred to Toledo, Ohio. **Dixie Hannibal,** general agent at Shreveport, La., has been transferred to Memphis, Tenn., succeeding **L. D. Nicholson,** assistant general freight agent, who has been transferred to Cleveland with the title of general agent of the freight and passenger departments. **H. W. Haines,** division freight and passenger agent at El Dorado, Ark., has been promoted to general agent at Shreveport to succeed Mr. Hannibal.

Engineering, Maintenance of Way and Signaling

Aless J. Loom, assistant superintendent of timber preservation and tie treating plants of the Northern Pacific at Paradise, Mont., has been promoted to general superintendent of timber preservation, with headquarters at Brainerd, Minn., succeeding **Andrew Gibson,** who retired from active duty on July 1 after 47 years of continuous service with that railroad. **George Hopkins,** assistant to the general superintendent of timber preservation at Seattle, Wash., has been promoted to assistant general superintendent, succeeding Mr. Loom. **Levi Johnson,** assistant at Paradise, has been appointed superintendent of the Brainerd treating plant.

L. G. Harris, who has been promoted to district engineer of the Northern district of the Western lines of the Atchison, Topeka & Santa Fe, with headquarters at La Junta, Colo., has been connected with that road for nearly 25 years. He was born at Parsons, Kan., on August 27, 1886, and entered railroad service in October, 1905, as a chairman on the Santa Fe at Canyon, Tex. Mr. Harris advanced successively during the following 12 years through the positions of rodman, transitman, building inspector and acting division engineer. In 1917 he was promoted to division engineer of the Rio Grande division at San Marcial, N. M., later being appointed construction engineer on various Coast lines projects, a position he held until his promotion to district engineer.

L. B. Porter, who has been promoted to signal engineer of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Milwaukee, Wis., has been connected with the signal department of that road for 20 years. He was born at West Liberty, Iowa, on June 30, 1888, and entered railway service in 1906 on signal construction on the Union Pacific. In the following year he was advanced

L. B. Porter

to signal maintainer. During 1908 and 1909 Mr. Porter completed a course in electrical engineering at the University of Iowa and later he served as a signal maintainer and as a draftsman in the signal engineer's office of the Chicago, Rock Island & Pacific. He entered the service of the Milwaukee in May, 1910, as chief draftsman in the office of the signal engineer at Milwaukee, being advanced to general signal inspector in May, 1912, and to assistant signal engineer of the Eastern lines in August, 1913. Mr. Porter's promotion to signal engineer of the system became effective on July 1.

Obituary

Nova Z. Douthitt, who was general livestock agent of the Missouri Pacific at Kansas City, Mo., from 1901 to 1906, died at his home in that city on June 30.

N. W. Hamilton, assistant superintendent of the Huntsville division of the Nashville, Chattanooga & St. Louis, with headquarters at Tullahoma, Tenn., died at his home in that city on June 28.

Arthur W. Sine, joint assistant superintendent of telegraph of the Atchison, Topeka & Santa Fe and the Western Union Telegraph Company, with headquarters at Topeka, Kan., who had been on a leave of absence for about a year, died in that city on June 1.

A. E. Harvey, former division engineer of several western railroads and since 1911 chief engineer of the Kansas City Public Service Company, died at Kansas City, Mo., on July 3. Mr. Harvey had been successively from about 1893 to 1911, a locating and construction engineer in Iowa on the Illinois Central and division engineer on that road at Dubuque, Ia., resident engineer on the Chicago Great Western at Chicago and division engineer on the Kansas City Southern at Mena, Ark.

John F. Dignan, superintendent of the Wisconsin division of the Illinois Central at Freeport, Ill., who died on June 8, had completed 46 years of railway service, 43 of which were with the Illinois Central. He was born at Rockford, Ill., on April 9, 1867, and obtained his first railway experience in 1884 on the Chicago & North Western at Rockford. Later he became a fireman on the Chicago, Burlington & Quincy, entering the Illinois Central service in 1887 as a fireman. From 1889 until 1911 Mr. Dignan acted successively on the I. C. as an engineman, a traveling engineer and trainmaster on the Tennessee division, and a trainmaster on the Wisconsin division. He was promoted to superintendent of the Wisconsin division on August 1, 1911.

Edwin W. Winter, former president of the Northern Pacific, who died at Fall River, Mass., on June 28, had been in steam and electric railway service for 44 years. He was born in Vermont on November 18, 1845, and gained his first railroad experience in the construction department of the Union Pacific. From 1873 to 1885 he served successively as general claim agent of the Chicago & North Western, general superintendent of the West Wisconsin (now a part of the North Western), general superintendent of the Chicago, St. Paul & Minneapolis and the St. Paul, Minneapolis & Omaha (both now parts of the North Western), and assistant president of those two roads. He was then appointed general manager of the Chicago, St. Paul, Minneapolis & Omaha, becoming president of the Northern Pacific in 1896. He left that position in 1897 and in 1899 was appointed president of the Chicago Transfer & Clearing Co. Mr. Winter served as president of the Brooklyn Rapid Transit Company and allied companies from 1902 until his retirement in 1911. Recently he had made his home in New York.